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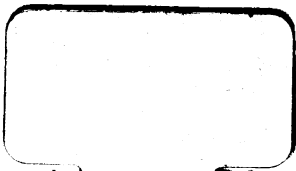
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TWENTY-SEVENTH REPORT

(THIRTEENTH BIENNIAL)

OF THE

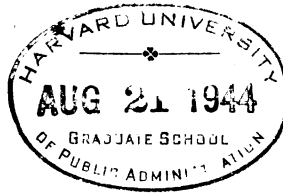
State Board of Health

OF THE

STATE OF NEW HAMPSHIRE

FOR THE FISCAL PERIOD ENDING JUNE 30, 1922

**CONCORD, NEW HAMPSHIRE
1922**



Printed by
John B. Clarke Co., Manchester
Bound by
Cragg Bindery, Concord

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NEW HAMPSHIRE STATE BOARD OF HEALTH**

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STATE OF NEW HAMPSHIRE.

OFFICE OF THE STATE BOARD OF HEALTH.

STATE HOUSE, CONCORD, N. H., July 1, 1922.

*To His Excellency the Governor and the Honorable
Council:*

I have the honor to submit, herewith, in accordance with the laws of the State of New Hampshire, the twenty-seventh report of the State Board of Health for the two fiscal years ending June 30, 1922.

Respectfully submitted,

CHARLES DUNCAN,
Secretary.

REPORT.

Herewith is presented the biennial report of the State Board of Health for the fiscal years 1921 and 1922.

The scope of health work is constantly increasing and in this report under new activities will be given an account of the two new departments, one of which is under the supervisory nurse and the other under a sanitary engineer. We submit for consideration the work accomplished by both these departments. It is not the purpose of this Board to become involved in any health work that interferes in the offices and functions of well established agencies, public or private. In these days there is great public demand for intensive health service. The public is asking why it does not sooner receive the benefit from the great field of scientific preventive medicine which offers a solution of this or that dreaded health condition.

It cannot be denied that it is the duty of health departments to take every reasonable means to get this information before the public. Tersely put, the public must be shown. This means work, work that must be as varied as the task confronted.

Public and private organization in health work must be supervised and led. They expect and demand the State Board of Health to lead, an official body whose authority under vested law makes it "cognizant of the lives and health of the people of the state."

The State Board of Health is ever mindful that under the law local health authorities have important and well defined health responsibilities. It is the purpose of the State Board to remind them of their duties. The State Board of Health is mindful of the fine work which has been

accomplished by the private agencies, and to encourage and aid these in their work the Board considers one of its great functions.

We have no fear that health administrations will come to be a pest, demanding the right to regulate everything and everybody, but believe that the public stands ready to support and finance all sane health programs that can demonstrate the preservation of life and health.

It is impossible to present in a report of this kind more than a very small part of the work of the Board during the period covered by this report. Much time has been spent in the important work of inspection of slaughter-houses, dairies and grocery stores. Specific advice has been given to health officers in regard to perplexing questions which have arisen and in many instances an officer of the Board has been sent to give aid in investigating the sources of infection, etc. This is most important work, especially in typhoid fever. The services of both the Civil Engineer and the Sanitary Engineer have been very helpful in solving problems which have arisen throughout the state in matters pertaining to the water supplies and sewage disposal.

The work of the field workers connected with this Board is constantly increasing and with the very limited force we now have, it would be almost impossible to cover the entire state with any degree of satisfaction if it were not for the untiring diligence of the workers concerned.

HEALTH OFFICERS.

In 1915, the Legislature enacted a law whereby the board of selectmen in towns and a health officer nominated by them and appointed by the State Board of Health constitute the board of health of the town. This law does not apply to the cities of the state having themselves an organized health department. The health officers are appointed for a term of three years. The law has worked out well and in almost every instance the same officer is reappointed,

thereby giving the town the benefit of his experience in health matters.

EXAMINATION OF WATER SUPPLIES.

There is an ever increasing demand for examination of public and private water supplies. Upon examination it has been found that some private supplies were unfit for domestic purposes and same have been discontinued. Under the report of the work done in the chemical department of the New Hampshire Laboratory of Hygiene will be found a summary of examinations. In accordance with the Interstate Quarantine Regulations of the United States, water supplies for use by common carriers (railroads and vessels) for drinking and culinary purposes in interstate traffic are examined.

FOOD AND DRUG EXAMINATIONS.

Investigations are constantly being made of the food and drugs offered for sale in the state and several successful prosecutions have been effected for violation of the food laws.

VITAL STATISTICS.

Under provision of the laws the vital statistics of New Hampshire are in charge of the State Board of Health. The returns of birth, marriages and deaths are made monthly by the clerks of the towns and cities of the state. After statistics are made from these cards, they are filed away for reference in a fireproof room and are consulted for a variety of purposes. This department has now on file copies of every birth, marriage and death as same appears on the books of the town and city from the earliest settlement up to and including 1921. These records constitute an invaluable file, and the records are consulted daily for various purposes.

The following returns were made to this department:

	1920.	1921.	In-crease.	De-crease.
Births	9,974	10,125	151	....
Marriages	5,641	4,791	....	850
Divorces	909	768	....	141
Deaths	6,783	6,098	....	685

Rate to each 1,000 of
estimated population:

Births	22.51	22.78
Marriages	12.73	10.78
Deaths	15.30	13.72

**REPORT OF THE DIVISION OF WATER SUPPLIES,
FOODS AND DRUGS**

Charles D. Howard, Chemist in Charge

Report of the Division of Water Supplies, Foods and Drugs.

DR. CHARLES DUNCAN,

Secretary, State Board of Health.

Dear Sir:—

I submit herewith a report of the work of the Chemical Department, otherwise known as the Division of Water Supplies, Foods and Drugs, for the period beginning September 1, 1920, and ending June 30, 1922.

A report in detail concerning the examination and control of water supplies follows. Details of the work of examination of foods, drugs, proprietaries and other articles, as well as a summary of the results of sanitary food inspections under the Law of 1911, will be found set forth in a separate report which is made a part of this volume.

CONTROL OF WATER PURIFICATION TREATMENTS.

In the last report attention was called to the urgent need of an inspector with engineering training for the field inspection of public water supplies and particularly for the supervision of purification treatments. It is gratifying that such an arrangement was subsequently effected through the appointment, in July, 1921, of Mr. Charles L. Pool. The modern demand is for a pure and safe drinking water,—one which shall be above question. While many of our New Hampshire supplies are of the highest purity, yet there is a considerable number—particularly inclusive of those of surface origin—the fitness and safety of which cannot be guaranteed except through the application of some form of treatment.

In view of the number of the latter now in existence and of the fact that their maintenance in a proper state of efficiency demands expert supervision—something which none of our cities or towns are able to provide—it is imperative that the state furnish this supervision.

To construct a filter plant or to install a chlorinator and to leave their operation to some laborer, or, at the best, to some person who, while intelligent and well meaning, has no adequate conception concerning the scientific principles involved, may be worse than useless. Our experience of the past year has but served to emphasize the conviction that the entire time of one engineer might with decided advantage be devoted to field work of this character. Without any question, this service to our towns and cities is an indispensable one, as well as one which is apparently being thoroughly appreciated.

NEED OF ADDITIONAL FOOD INSPECTION FACILITIES.

Attention should be called to the fact that it is highly desirable that at least one inspector be attached to this department who shall give his time exclusively to food control work. As at present, the latter is handled by the general agent of the Board, who, originally devoting all of his efforts to this work, has gradually come to have a great multiplicity of other and non-related duties to engage his attention.

To effect a similar control in other lines, the importance of which is no greater and the demands no more extensive, other state departments enjoy the services of a number of agents. At present, the Manchester health department has four inspectors devoting their time largely or wholly to certain phases of food inspection and covering that city only. Were the situation similar in every other city and town, there would admittedly be no great necessity for any extensive centralized control.

But in most of our cities and towns there is no local food inspection worthy of the name. Such an elementary thing as milk inspection, even, is practically non-existent in one or two of our cities, as well as in quite a number of our larger towns. In some of these the health officers decline to be bothered with such matters as collecting samples for examination and, worse still, it is difficult to arouse those in local control to a sense of the desirability of oversight of this character.

MILK INSPECTION.

Reference may be made to the fact that we have three different types or classes of food inspection. These are: (1) milk inspection, which under the law is supposed to be carried out under the initiative of the cities and towns. Three of our cities and at present one town are living up to this obligation in a very satisfactory manner, and over these this department exercises no control. In two or three other cities the local health officers make the dairy inspections periodically and on their own initiative collect monthly samples for examination at this laboratory. In the event that any violation is noted, complaint for prosecution must originate with the local official. In practically all other cases there is little or no local activity, this department being looked to to initiate both sample collections and dairy inspections.

In addition to milk and cream, the examination by milk laboratories of ice cream is also feasible,—at least insofar as results by the simple volumetric procedure for fat suffice. Where the composition is close to the limit or where prosecution is contemplated, the application of gravimetric methods is desirable.

SANITARY FOOD INSPECTION LAW.

(2) Sanitary food inspection, as contemplated under the Law of 1911. This is to insure the cleanly production, distribution and handling of foods of all descriptions. Ex-

posure to any and all forms of contamination, including possible infection by employees afflicted by any form of disease, is forbidden. Included in this category are groceries, dairies, meat markets, soda fountains, bakeries, slaughter-houses, ice cream plants, bottling establishments, candy factories, restaurants, hotels, public camps and the multitude of roadside refreshment stands which have of late years sprung up. With the exception of three or four of the cities nothing whatever is being done along these lines locally, and such work therefore at present all devolves upon the general agent of the Board. Manifestly it is impossible for one man, covering the entire state and with other duties to attend to, to do much more than scratch the surface. Any effective system of following up is out of the question. That results are nevertheless being achieved and that a considerable general improvement has been effected in this respect during the past decade is a circumstance which is to be accepted as in very large degree an evidence of the energy and personality of the present agent, Mr. Joseph X. Duval.

LAW RESPECTING ADULTERATION AND MISBRANDING.

(3) Inspection for the control of adulteration and misbranding, as provided under the Food & Drugs Law of 1907. This is necessarily a specialized matter which cannot be satisfactorily handled locally in the absence of an extensively equipped chemical laboratory and of a staff which, in addition to the requisite professional training, possesses the important essential of the lengthy experience serving for expert qualification. It is rightly provided therefore that this law shall be administered by the state health department. Even the collections of samples can be entrusted only to a person of special experience, one who is working under laboratory supervision and who knows what and what not to take up. This fact is cited for the purpose of refuting any idea that through the expenditure of a few

dollars for apparatus and the employment of some person with a smattering knowledge of laboratory technic, it would be practicable for any of our cities to engage in the work of general food and drug control.

COLD STORAGE LAW.

This law, enacted in 1917, provides that all refrigerating warehouses in which meat, fish, poultry, game, eggs and butter are continuously stored for a period of thirty days or more at a temperature of forty degrees Fahrenheit, or below, shall operate only following the issuance by the state board of health of an annual license, the same to be conditioned upon approval of the sanitary condition of the premises and of the character of the methods employed.

It is also required that quarterly reports indicating quantities of stock placed in storage shall be made and that no stocks shall be held for a period longer than twelve calendar months, except with the express consent of the Board as to each individual instance.

Other provisions include a requirement that all poultry and eggs held in storage longer than thirty days shall be suitably marked as exposed to retail sale and that the containers of such as delivered to the purchaser shall also be marked.

In practice certain features of this law have been found difficult of enforcement, for a number of reasons. Evasion in various ways is an easy matter and this is particularly true where, as with us, the limited inspectional facilities render impossible giving the considerable amount of detailed attention essential for any effective system of checking up. The absence of any national act and the fact that it is an easy matter to hold goods in storage for a period in one state prior to transfer to a warehouse within our own borders involve other handicaps. By avoiding holding goods, or by claiming goods are not held, for the full thirty day period, to which only the law applies, it is possible for

places which are ostensibly cold storage warehouses to escape the licensing provision.

The following were licensees under the Cold Storage Law at date of July 1, 1922:

Cudahy Packing Company, Nashua
Swift and Company, Manchester
Swift and Company, Laconia
Fred D. Lewis and Company, Bethlehem

Two other firms to whom licenses have been issued in the past have gone out of business and a number of others have lately made representations that they do not carry stocks for the full thirty days' period. At the present time one firm, believed to be operating in violation of the law, is under investigation.

So far as has been observed, but a relatively small amount of cold storage poultry as coming within the provision of this law is handled by New Hampshire dealers. The requirement regarding the labeling of eggs has been found to be very generally complied with. In one case arising during the past year there was some evidence indicating that a Massachusetts firm was evading this feature, but pending final confirmation shipments ceased. Really effective enforcement of this law can be secured only through provision for additional facilities.

FOOD LICENSING LEGISLATION.

A bill introduced during the last session, and which failed of passage, was designed through a system of licenses to make feasible more effective sanitary control of bottling and ice cream plants and of places where soda water and ice cream are vended. It is hoped that some such legislation will be eventually successful, as in fact it must be, judged by the present very strong trend in this direction in other states. It is safe to predict that the time will come when,

instead of a few, all classes of places where food is manufactured and distributed will be subject to sanitary control through the licensing system. This is the only effective way of eliminating dirty places and methods and of curbing certain types of operators whose insolent and persistent disregard of the elements of sanitation is a menace to the public good.

OPERATIONS UNDER INFLAMMABLE POLISH LAW.

This department has also exercised control of the enforcement of the so-called "Inflammable Polish" law, as enacted at the last legislative session. This law, which had its inception in a number of catastrophes, some of these involving fatalities due to the use of inflammable stove and metal polishes, is working out very satisfactorily. At the present time practically all polishes of this character are now off our markets, and this without the necessity of a single prosecution.

In connection with assistance rendered to polish manufacturers by this department, attention has from the first been called to the fact that there is no necessity for the sale of the inflammable variety, in view of the ready applicability for this purpose of such a compound as carbon tetrachloride. Unfortunately a difficulty which has recently arisen, now that a large number of manufacturers have revised their formulas so as to utilize this substance, is that a Massachusetts manufacturer has lately patented this "discovery" and is now said to be threatening his competitors with suits for infringement.

Mr. John P. Head was appointed assistant chemist January 1, 1921. I am glad to commend his conscientious and faithful assistance, as well as that of Miss Bertha M. Stohrer, upon whom falls the onerous burden of serving as clerk for both the chemical and pathological departments.

In view of the extensive increase in the work of both these departments in recent years, additional provision in this connection will very shortly become imperative.

Respectfully submitted,

CHARLES D. HOWARD,
Chief of Division.

EXAMINATION AND CONTROL OF WATER SUPPLIES

Report on the Examination and Control of Water Supplies.

NUMBER OF EXAMINATIONS.

As indicated by the summary of analyses as contained in the appended tables, there were examined during the period of twenty-two months ending June 30, 1922, a total of 2236 samples. Of this number 1066 represent samples collected from public systems, or in connection with public systems, 260 were from sources of public interest, furnishing water to factories, hotels, camps, schools, etc., while 910 were from sources of private character.

Of the 1170 samples representative of the two last mentioned classifications, no less than 749, or 64.1 per cent., were criticised as failing to be indicative of a satisfactory degree of purity. It should not be assumed however that the latter were all representative of waters unfit for domestic use; in very many of these cases the criticism was based upon evidence of some minor or temporary form of contamination, such as could presumably be readily corrected through the adoption of proper sanitary measures.

LEAD AND ZINC CONTAMINATION.

No other state has given more attention to the examination of drinking waters for lead than New Hampshire. This subject, as well as contamination due to zinc, is the basis of a special article prepared for publication and reproduced in part elsewhere in this report.

During the period covered by this report 380 samples were examined for lead, 71, or 81.7 per cent., showing the

presence of what may be deemed substantial, or "dangerous", amounts (0.050 parts), while 147 samples, equivalent to 38.7 per cent., showed quantities which, under favoring circumstances, would be likely eventually to be productive of toxic effects. As indicating the improvement in this respect which has been effected by our efforts during the past dozen years, the following tabulation will be of interest:

Period.	Total lead Examinations.	Per cent. showing 0.050 or more parts per 100,000
1909-10	699	49.5
1911-12	677	39.0
1913-14	632	45.0
1915-16	581	33.2
1917-18	371	24.0
1919-20	439	21.4
1921-22	380	18.7

BACTERIOLOGICAL EXAMINATIONS.

Increased assistance has made possible the devotion of a somewhat larger amount of time to certain phases of the bacteriological examination. This has been more especially in connection with the application of methods for confirmation of the results of the presumptive test for *coli* for which purpose both the official procedure of the American Public Health Association and that of the United States Hygienic Laboratory (Levine's) have been utilized.

Up to early in 1921, except in the case of railroad sources for certification under the United States Public Health Service rules, this laboratory had for years relied for its colon findings chiefly upon the results of a presumptive test based upon the use of bile medium, it being believed that while the results were not an absolute index of the presence of the true colon organism, yet because such was actually true of all but a small percentage of cases, these results might be accepted as fairly authoritative evidence,—if not in all instances of the presence of *coli*, at least of some organism which simulated this bacillus and which ought not to be

present in any water supply the sanitary conditions attending which were all that they should be.

CERTIFICATION OF RAILROAD WATER SUPPLIES.

The following supplies were unconditionally or provisionally certified, in effect at date of June 1, 1922

Place	Source	Common Carrier
Bartlett	Precinct supply	Maine Central R. R.
Bristol	Town supply	Boston & Maine R. R.
Claremont	Town supply	Boston & Maine R. R.
Concord	City supply	Boston & Maine R. R.
Dover	City supply	Boston & Maine R. R.
Exeter	Town supply	Boston & Maine R. R.
Fabyans	Private supply	Boston & Maine R. R.
Fabyans	Private supply	Maine Central R. R.
Hillsborough	Town supply	Boston & Maine R. R.
Keene	City supply	Boston & Maine R. R.
Lancaster	Town supply	Boston & Maine R. R.
Lancaster	Town supply	Maine Central R. R.
Manchester	City supply	Boston & Maine R. R.
Nashua	City supply	Boston & Maine R. R.
Plymouth	Town supply	Boston & Maine R. R.
Portsmouth	City supply	Boston & Maine R. R.
Portsmouth	City supply	Isles of Shoals S. S. Co.
Wolfeboro	Town supply	Boston & Maine R. R.

IMPROVED CONDITIONS IN CONSEQUENCE OF INSPECTION AND CONTROL.

A definite system of inspection and control of public water supplies was first inaugurated in 1901, conjointly with the establishment of the Laboratory. A brief general review at this time of results achieved in consequence, either directly or indirectly, of these two decades of supervision may be worth noting.

During this period a total of twenty-nine new public water systems have been installed. In large degree these have been the result of evidence as established by this division of a generally polluted condition of the individual sources from which the community drinking water was previously derived. In seven cases, because of contaminated or unsatisfactory conditions demonstrated to exist, the original source of public supply has been abandoned and replaced by one of approved type.

Various improvements in the sanitary conditions of watersheds and in methods of supervision have been directly consequent upon our criticisms and recommendations in the case of practically all of our public water systems. Situations very commonly existent twenty years ago and which neither the management nor the consumer thought anything about would be today looked upon as disgraceful and not to be tolerated. Watersheds have been cleaned up, cattle have been fenced out, hundreds of buildings have been bought and torn down or moved, and thousands of acres of land have been acquired for the purpose of the exercise of more effective control over quality and protection of purity.

In addition seven filtration plants of municipal character have been inaugurated and sixteen chlorination equipments installed. Special attention has been given to the unearthing and correction of situations involving industrial or cross connections with the public source whereby the purity of the latter was imperilled.

And today, while there is still room for a great deal of improvement, yet the general situation compares favorably with that existent in other states where a much larger staff is engaged and a far larger amount is being expended. Incidentally it is but fair to be permitted to state—because it is a fact of which almost none of our citizens have any realization—that this work has not only formed but a part of the duties of the chemical department, having been carried out in conjunction with its food and drug control activities (which latter, in perhaps a majority of states, is a matter handled by a separate department or division), but that up to 1921 the greater part of such field inspection work as could be done devolved upon the chemist in person, and finally, that up to 1919, not even the very ordinary advantage of an office clerk was enjoyed by this department.

PURIFICATION TREATMENTS.

Following is a summary of treatments in operation at date of July 1, 1922:

Filtration only,	4
Chlorination only,	9
Both filtration and chlorination,	5
Aeration only,	1
Total public sources treated,	19
Filter plants,	9
Total chlorinator installations,	16

Table indicating distribution of these treatments is appended.

PUBLIC WATER SYSTEMS HAVING SOME FORM OF TREATMENT—1922.

Supply.	Type of filtration.	In-stalled.	Chlorination.	In-stalled.	Remarks.
Belmont	none	....	yes	1919	Chlorination applied to brook auxiliary.
Berlin .....	*	....	*	....	*Mechanical filtration (but without coagulation) of Androscoggin river auxiliary, using hypochlorite. Process inadequate. River supposed to be resorted to only in emergency but has been extensively used.
Derry	none	....	yes	1920	Chlorinates well water supply.
Dover	slow sand	1909	none	....	Filtration combined with aeration for iron removal. Chlorination contemplated.
Epping	none	....	yes	1921	Chlorination of river source.
Exeter	mechanical	{ Prior to } { 1900 }	yes	(?)	Chlorination primarily to promote flocculation of clay turbidity.
Franklin	slow sand	1908	yes(2)	1915	Filtration and chlorination of auxiliary river source.

*See page 27.

Supply.	Type of filtration.	In-stalled.	Chlorination.	In-stalled.	Remarks.
Laconia	none	....	yes	1921	Original hypochlorite installation (1912) now replaced by liquid chlorine.
Lebanon	mechanical	1907	yes	1918	Filtration and chlorination of Mascoma river.
Merrimack	semi-slow	1914	none	....	Aeration and filtration for deferrization of well water supply.
Milford	slow sand	1921	none	....	Aeration and filtration for deferrization of well water supply.
Nashua	none	....	yes	1920	Chlorination installed as a safeguard and not because of any condition involving contamination.
Peterboro	none	....	yes	1920	Brook source chlorinated.
Portsmouth	none	....	yes	1921	Chlorination installed on new well system as safeguard.
Somersworth	slow sand	1897	yes	1913	Filtration and chlorination of Salmon Falls river supply.
Walpole	slow sand	1904	none	....
West Lebanon ..	*	1918	none	....	*Provision for aeration of Boston Lot auxiliary. Source of Hartford Water Company.
Woodsville	none	....	yes	1914	Chlorination of Ammonoosuc river supply.
Salem—(Canobie Lake Park) ..	none	....	yes	1920	Chlorination of Canobie Lake supply of amusement park.

WATER SUPPLIES OF CITIES AND TOWNS.

The usual chemical and bacteriological examinations have been made of all of the public water systems of the state, and in addition numerous field inspections have been made either by the engineer or by the chemist in charge, or, in connection with special problems arising, by both.

In the following pages there is presented comments concerning special features as noted in connection with cer-

*See page 27.

tain of the water systems. These relate to treatments installed, improvements effected, new sources added, and other special features as noted in the field inspection or laboratory examination by way of commendation or criticism.

In addition, inasmuch as the results of bacteriological examination afford an index of the degree of fecal contamination and, unlike the chemical data, lend themselves to expression and comparison on a definite numerical basis, a summary of such results is here presented in the case of all of the city supplies.

*In this connection reference should be made to the standards of purity as established by the Public Health Service, United States Treasury Department, and enforced as to all supplies furnishing drinking water for train use. These standards require that no organisms of the *b. coli* group shall be demonstrated in inoculations representing one cubic centimeter portions of the sample, and that of the ten cubic centimeter portions examined, not more than twenty per cent. shall be positive; also that there shall be not more than one hundred organisms growing at a temperature of 37°C. While this standard is by many regarded as rather severe and there is a disposition not to apply it too rigidly in cases where the inspectional conditions are demonstrated as being reasonably good, yet the supplies of a majority of our cities come well within the prescribed limits.

ALTON.

During the summer of 1921 the supply as operated for many years by the Alton and Alton Bay Water Company was taken over by the town with a view to securing better service, there having been some complaint based upon inadequacy and a run-down condition.

The chief source consists of a circular open well fifty feet in diameter situated at a considerable elevation above town and a mile or more above the east shore of Alton Bay. Water from a springy area above, conducted into the well, serves to augment

*See references to this paragraph under cities and towns.

this supply and it is probable that by suitable development the yield from this source might be materially increased.

Although rather poorly cared for, this source represents water of excellent quality. An auxiliary supply has been provided by pumping from the lake, the intake being forty feet off shore at a point on the east side of the Bay about a quarter of a mile from the mouth of Merrymeeting river. While the physical character of this water is generally very good, yet in addition to some obvious contamination of the Bay at this point, recent investigations have indicated that a material degree of pollution is being carried in by the river.

The town has accordingly been advised that if resort to this source is continued, chlorination will have to be installed. Thus far no action has been taken, largely in view of the local expectation that with development of the main source the utilization of this auxiliary will be no longer necessary.

ANTRIM.

During the fall of 1921, considerable criticism having arisen concerning the quality of the water supply, instructions were given for application of the copper sulphate treatment.

The pond in question has an area of about sixteen acres with an estimated capacity of thirty-three million gallons, and as the treatment advised was at the rate of three pounds per million gallons, one hundred pounds of sulphate were required, the cost of one application being ten dollars. Subsequently a second application was given and during the spring of 1922 this was again repeated, with very satisfactory results.

ASHLAND.

Inspection by this department of the Ashland town supply was made for the first time on September 13, 1921. Objectionable conditions at the pond intake, involving shallow water and cattle wading, afforded ground for criticism. The following data were noted:

The pond is situated about two and one-half miles southwest of village, of an irregular, narrow, oval shape, fifty-six acres in extent, and average depth thirteen feet. At the northeast end of the pond an outlet pipe, on which a gate valve is placed, feeds a brook. About one-half a mile down the brook a dam is placed, forming the distributing reservoir.

About one-third of the shore is pastured. About a dozen cattle have access to the pond at the outlet end and make a wading place of this part. The outlet pipe goes out but twenty feet or so, and the water was noted as being only about a foot deep above the end of the pipe at the time. The shore is rather mucky at the outlet. The natural outlet or overflow would feed the same brook and permits of an increase in water elevation of little over one foot, so that at no time is the outlet pipe in deep water. The pasturage conditions here should not exist.

There are but two dwellings on the watershed, both about a quarter of a mile from the pond, one a summer camp for a private family, the other a small farmhouse with small farm where there was no evidence of any appreciable cultivation. The balance of the watershed is entirely wooded, mainly birch. Elevation of pond above village is 312 feet.

There is a substantial concrete dam about one hundred and ten feet long, six feet thick and eight feet high, causing a reservoir of about one-sixth of an acre. Bushes about the shores are entirely too abundant but there are no sanitary objections to the reservoir feeding brook. Elevation of reservoir above village is two hundred and thirty-two feet, giving about one hundred pounds pressure. Fourteen hundred people are supplied, about three hundred and twelve services.

BARTLETT.

Lumbering operations on the source of the Lower Bartlett Precinct supply being now concluded the consumers of this village are no longer exposed to the dangers as existent through a number of years.

The supply of Bartlett Village Precinct ranks amongst the first in the state in excellence. Inspection of this system by this department on August 24, 1921, afforded the following information:

This is a gravity system supplying about one hundred and ten customers, including the Maine Central Railroad, which uses about two-thirds of the water consumed. There are two impounding reservoirs known respectively as the "Louisville" and the "Lower," or "Old."

Louisville Reservoir, about one and one-half miles from village on foot of Bear Mountain, on Government Forestry Reservation. Two spring-fed brooks feed reservoir. Concrete dam about one hundred and fifty feet long, on a ledge so that unique

feature of reservoir is a smooth stone bottom. Watershed all wooded, uninhabited and free from pasturage. Pressure in town from this reservoir varies from eighty to one hundred and ten pounds. Water conveyed to town in iron piping starting in eight-inch pipe, then six-inch, four-inch and three-inch at town end. Two fine mesh screens in house below dam. Reservoir in good condition, but rather abundantly bordered with bushes on three sides. Two or three acres about reservoir owned by town. Capacity roughly estimated as approaching two hundred thousand gallons.

Lower reservoir, capacity said to be one million gallons, located about three-fourths of a mile from town and about one-half a mile from upper reservoir, on foot of Bear Mountain. Stone dam, earth and gravel sides and bottom. Brook entering reservoir coming from wooded and uninhabited watershed free from pasturage. Reservoir empty at present, waiting for rains to flush out after cleaning. When in operation this reservoir limits the pressure in town mains to fifty-three pounds. Two sets of fine mesh screens in gatehouse at the dam.

No secondary private fire connection or emergency sources. Sanitary survey indicated satisfactory conditions.

BELMONT.

This town has experienced some difficulty in securing a sufficient quantity of water of satisfactory quality. To supplement a gravity ground water source, which is normally of excellent character, it has been the practice for some years to pump from a small brook. The latter, while of good physical quality, is exposed to contamination to a rather serious extent by drainage from cultivated land and farm buildings, and in 1919 a chlorinator was installed. For some time thereafter the results from this installation were distinctly unsatisfactory but several inspections by this department have apparently served to correct the earlier operating defects. This is the only installation of this character that has given any serious trouble and it affords a good illustration of the need of a periodic checking up of conditions and methods.

During 1920 the reservoir was repaired and a swampy place on the upper side filled in with gravel. Due to a well meant but mistaken plan to increase the amount of water collected, it was found that through the construction of a small earth dam, surface water from above was caused to accumulate on the

newly gravel-covered area and seep into the reservoir, the result being a considerable complaint due to the appearance of iron. Subsequently a survey by this department of the territory above the reservoir seemed to indicate that through suitable development a considerable additional quantity of water might be secured and the town has accordingly been advised to give this feature consideration, with a view, if possible, to ultimate abandonment of the brook source except as an emergency supply.

BERLIN.

During 1921 an additional mountain brook was added to the supply of the Berlin Water Company, making five brook reservoirs now in service. Due to the nature of the watersheds this supply is relatively high colored and on this account has been subject for some time to criticism by consumers. The real criticism of this supply, however, is in the fact that the various additions which have been made in recent years do not seem to have resulted in adequacy and it is still at times found necessary to pump from the Androscoggin river, although it is claimed that such is now very infrequently done.

While this river water is not only filtered but is supposed to be chlorinated (by hypochlorite) yet neither process is carried out in such manner as to warrant water from this source being deemed at all times safe for drinking purposes.

Of the 26 faucet samples examined bacteriologically during the period, one, equivalent to 3.8 per cent., showed the presence of *b. coli* in one cubic centimeter inoculations, while of the 49 ten c. c. inoculations made, 13, or 26.5 per cent., were positive.*

BRISTOL.

A considerable controversy developed in connection with protests against the practice of bathing on the east shore near the mouth of Newfound lake. It was argued that inasmuch as there is said to be a considerable current here there was no logic in exacting the one-fourth mile requirement in this case. Investigation showed, however, that the water company's intake pipe from its termination at the sand bar to a point below the bridge was put together with open joints. Accordingly during the past two seasons a stretch at the upper end of the beach one-fourth mile from the intake was staked off and bathing restricted to this area.

*See page 27.

CHARLESTOWN.

In 1913 an inspection of the Charlestown supply disclosed the existence of certain unsatisfactory conditions. Another inspection in November, 1921, showed that while some improvement had been effected there was still considerable ground for criticism and a lengthy report embodying recommendations was presented to the commissioners. This supply is derived from a small brook which is exposed at some points during the open seasons to contamination by drainage from farm buildings and land and the pasturage of cattle.

CLAREMONT.

This is a gravity surface supply of very good quality, derived from four brook reservoirs. Bacteriological examination of the thirteen faucet samples collected at various periods showed: Per cent. *b. coli* in 1 c. c. inoculations, 0.00. Per cent. *b. coli* positives from 27 ten c. c. inoculations, 7.4.*

COLEBROOK.

An inspection made October 27, 1921, of the source of the Colebrook Water Company's supply disclosed conditions as previously criticized to be unchanged. Pasturage, involving opportunity for cattle to wade in the brook above the intake, is the main objectionable feature from a sanitary standpoint in connection with this supply, the other being a highly colored condition at times due to drainage from a swamp. Renewed assurances that improvements would be effected have been given.

CONCORD.

Of the 18 faucet samples examined bacteriologically none showed the presence of *b. coli* in one c. c. inoculations while the number of *b. coli* positives from 45 ten c. c. inoculations was 4, equivalent to 8.8 per cent.*

DERRY.

Although uniformly found to be of good physical and organic quality, yet due to seepage from a near-flowing sewage-laden brook the proportions of nitrates and chlorides in the well water supply of the Derry Water Works have shown a pro-

*See page 27.

gressive increase, both being at the present time in considerable amount. Because of this fact a chlorinator was installed during 1920 as a precautionary measure.

None of the 14 samples examined bacteriologically showed the presence of *b. coli* in one or ten c. c.*

DOVER.

Twenty-three faucet samples were collected from the supply of the Dover Water Works during the period ending June 30, 1922. The percentage of *b. coli* positives from 47 ten c. c. inoculations was 19.2., while one sample showed the presence of these organisms in one c. c.*

EPPING.

During 1921 the plant of the Epping Water Company was acquired by the village precinct and with a view to much needed improvements being effected it was examined by this department and certain recommendations made.

The source is the Pawtuckaway river at a point just below the highway bridge. While this stream is not exposed in any gross degree to pollution by domestic or industrial sewage discharge, yet there is sufficient incidental pollution to wholly unfit this water for domestic use without treatment. Analyses have almost invariably disclosed a substantial degree of fecal contamination. Originally installed for manufacturing purposes, this supply was later piped into a number of residences, and there can be no question that for some years it has been utilized for general domestic purposes, including even for drinking by the less discriminating of the people of the village. Notwithstanding its distinctly unsafe character and the fact that it may have been repeatedly responsible for enteric disorders of more or less serious aspect, the usual argument in favor of this river source, viz., that no cases of typhoid have occurred in the village for a number of years, was advanced, and it is evident that the local attitude is one of toleration and indifference.

At the time of purchase the precinct was advised that it had two courses, (1) to seek a suitable source elsewhere or (2), less preferable, to construct a filter plant for treatment of the river water. As the organization pleaded that there was no prospect of any possibility of either being done at this

*See page 27.

period, it was subsequently informed that at the very least, and as an emergency expedient, it would be compelled to apply chlorination.

Accordingly, during the autumn of 1921 a chlorinator was installed. Concerning the effectiveness of its operation, however, this department has but little knowledge, inasmuch as it has proved impossible to secure the periodic collection of samples the examination of which is indispensable as a check on effectiveness, and on the last occasion that this device was inspected it was found to be out of repair. It should be obvious that, entirely regardless of the form of treatment employed, unless there can be assurance that this is operated in an efficient and absolutely continuous manner, such might about as well not exist, especially as the knowledge by consumers of its use, conveying as it does a false sense of security, may lead to the avoidance in many cases of precautions which would otherwise be observed.

FRANKLIN.

A portion of the supply of the Franklin Water Works is derived from the Pemigewassett river, the water thus pumped, following storage in a settling basin, being slow-sand-filtered and chlorinated. Much of the volume accumulated in the settling basin has been found to represent ground water from the adjacent hillside. During 1921, partly to increase the filter capacity, partly to secure larger utilization of this ground water source, another filter-bed of capacity about equal to the original was constructed at the edge of the slope.

While relatively few samples from this source were examined during the period these have all been indicative of water of excellent quality both chemically and bacterially. None of the ten c. c. inoculations for b. coli showed the presence of this organism.*

HAVERHILL.

In reference to the report as appearing in the Report of the Board for 1919-20 relative to the project on the part of Woodsville precinct to secure a new supply for this village, the only additional action taken in this direction to date is the purchase of the plant formerly operated by the Woodsville Aqueduct Company, with source in the Ammonoosuc river. While this supply has been chlorinated for some years yet this treatment

*See page 27.

does not represent adequate purification, and filtration is badly needed. In case the precinct ultimately determines to adopt this as its established source of supply, the installation of filtration will be indispensable. The recent financial loss through the destruction of a large river bridge is offered as being responsible for a suspension in the carrying out of this project.

HILLSBOROUGH.

Incidental to certification of the Hillsborough supply for train use and certain criticisms as raised in this connection by the United States Public Health Service, three inspections were made of this source during 1921 and 1922. The source is Loon Pond, about four miles northwest of the town, approximately one mile in length by a half mile wide, the water being conveyed to a distributing reservoir. This water is of excellent physical quality, and the relatively few examinations as made each year have not been suggestive of the existence of any contaminative influences.

The survey showed the existence of some twelve summer cottages located either at the water's edge or adjacent thereto. While boating is permitted it is claimed that a rule against bathing in this pond is rigidly enforced, it being the practice of the cottagers to resort for this purpose to a smaller pond situated within easy reach.

Basis for criticism was found in connection with the disposal arrangements as noted at a number of the cottages, and these conditions were duly corrected. Ground for criticism also exists relative to a small brook entering the pond and which drains a pastured area. While the situation as at present involves nothing exceptional or very unusual, yet there is ground for distinct objection to the existence of these summer residences on the shores of the town's water supply, and the town has accordingly been urged to take steps looking toward their ultimate removal. In this respect the town might well profit by the example and experience of the city of Concord.

HOOKSETT.

For many years the residents on the west side of the river have been furnished water from Pinnacle Pond. This supply, while of satisfactory quality, is inadequate, due to the small pipe system and low pressure. That portion of the village lying on the east side of the river, which includes most of the families

employed in the Dundee Mills, has until recently been dependent upon wells and upon a highly objectionable supply as pumped by the Mills from the Merrimack river and piped to a boarding house and a number of residences.

As usual the claim was made that this water was not used for drinking purposes, although excellent reasons existed for believing that it was so used, especially during the winter months. It was admitted, however, that this source was utilized for ablution, for cleansing teeth, washing of utensils and for the preparation of food.

During 1920 the Mills were notified that this situation could no longer be tolerated and the latter, promptly recognizing the legal liabilities involved, at once took steps for the inauguration of a new system through the construction of some wells. This water, which is of good quality but unfortunately limited as to quantity, is now in use, being also now employed for drinking and ablutionary purposes in the Mills.

An enlargement of the Pinnacle Pond system to supply the west side is very much to be desired and while this matter was at one time scheduled for action in town meeting, nothing has as yet been done.

A third section of the village, comprising some twenty dwellings situated at the northerly end on the east side, is also involved in a bad water supply situation. These houses are supplied by a small brook-fed reservoir located near the main highway and the property of Mount St. Mary's Seminary. This reservoir, which is practically in a barnyard and exposed in material degree to pollution, was found to be in a decidedly filthy condition, analyses of samples of the water disclosing this to be full of vegetable matter and wholly unsuitable for domestic use.

This supply was accordingly condemned forthwith but in view of the outburst of protest at its being shut off on the part of the consumers—many of whom would seem to be quite satisfied to use it notwithstanding its filthy character—and the fact that contemplated new sources have not yet been developed, this supply is still being permitted delivery under placarding.

A logical remedy for this situation would be in extension of the supply line to the main reservoir supplying Mount St. Mary's, which is but a short distance above. This institution, however, has declined to take any action whatsoever with regard to effecting improvements, representing that such would not be financially practicable.

HUDSON.

Known under the name of the Hudson Water Company, a supply derived from wells and operated by the H. M. Payson Company, Portland, Maine, furnishes water to the residents of Hudson Bridge. While this is inherently water of excellent quality, being soft, free from organic matter, iron and other objectionable elements, yet there has always been some complaint on the part of consumers.

Following a particularly vigorous protest during the spring of 1922, a thorough investigation was made of conditions throughout the village. Tests were made at the individual faucets both for suspended and dissolved iron, using respectively cotton disc filters and a solution of tannic acid. While it was found that at all central locations, where good circulation existed, there was practically no ground for complaint as to quality (although complaint concerning weak pressure was encountered everywhere), at or near the "dead ends" conditions were uniformly bad and in at least two cases noted, representing dwellings on the end of a line, the water was so iron-impregnated as to be quite unsuitable for either drinking or cooking purposes.

Trouble of this character, particularly in the case of ground water sources, tends to be rather common and this is especially so where, as would appear to be true in this instance, the pipe system is neglected or not properly cared for. In such cases it is only through an intelligently carried out program of periodic blowing out of the system at the hydrants, with the introduction of "loops" at the dead ends, that this trouble can be avoided, although in exceptional cases treatment for removal of carbon dioxide may also be called for. Once this situation becomes established, the system is practically condemned in the minds of the consumers as it is well nigh impossible to make the latter believe that such water is not seriously polluted at its source and that its use can be other than actively detrimental to health.

In this instance the company was advised of the situation, recommendation being made that it proceed to have its mains cleaned through the use of some one of the devices now available for the purpose. At the same time consumers were also reminded that inasmuch as the average life of the ordinary galvanized-iron service pipe with ground water sources is but

fifteen years and as some of these services had admittedly been in double this time no relief could be expected until replacement had been made.

KEENE.

The supply of the Keene Water Works is derived for the most part from Echo Lake, the shores of which tend to be somewhat swampy and the water in consequence carrying rather more color and vegetable matter than is true of many of our surface sources. The normal point of intake is in Roaring Brook, some four miles below the lake and with rains there is a tendency for the water as drawn to show an undesirably high turbidity at times.

During 1920 the city made a contract with a box company for the cutting of timber on the lake watershed, this operation to continue for three years. During the winter the timber is hauled across the lake. So far as could be determined no established privies or latrines were in use and an investigation as made in July, 1921, in consequence of some unfavorable analyses, seemed to indicate that adequate sanitary supervision of these operations was lacking.

In this connection opportunity may be taken to urge the desirability of an amendment to the law of 1913 which shall require that the State Board of Health be notified in advance of contemplated lumbering operations to be carried out on the watershed of a public water supply in order that consumers may be assured that the camp layout has been approved by competent authority and the usual sanitary restrictions established.

Of sixteen faucet samples examined bacteriologically during the period, one showed the presence of *b. coli* in one c. c., while the percentage of *b. coli* positives from 33 ten c. c. inoculations was 24.2.*

LACONIA.

The intake of the Laconia Water Company is in the lower and comparatively narrow part of Lake Paugus at a point but a short distance above the railroad station and steamboat landings. Although this water is of excellent physical quality there is a certain and gradually increasing amount of contamination entering at this point, as well as some pollution brought down by the current from the sewerage discharge at the Weirs. While the latter is inconsiderable by the time it reaches Lakeport, yet its existence was long ago recognized and made the

*See page 27.

occasion for the first installation in New Hampshire (in 1912) of a chlorine treatment plant. Recently this hypochlorite treatment was replaced through the installation of a modern chlorinator utilizing gaseous chlorine, since which time examinations have indicated practically complete freedom from organisms of the colon type.

Of twenty-three faucet samples examined bacterially during the period, one showed the presence of *b. coli* in one c. c., while the percentage of *b. coli* positives from forty-seven ten c. c. inoculations was 21.3.*

During 1921 a chlorinator was installed at the New Hampshire School for Feeble-Minded for treatment of the water supply of this institution, derived from Opeechee lake.

LANCASTER

The town owns a mountain brook supply of exceptional quality and our analyses have uniformly been indicative of a very satisfactory degree of purity. At the same time an inspection in August, 1921, of the brook watershed just above the intake on the lower slopes of Kilkenny Mountain disclosed certain conditions inconsistent with a scrupulous regard for the protection of purity. Thus it was found that there is a considerable practice of fishing along this brook above the intake. A fence for the exclusion of cattle pastured at one point on the watershed was also deemed to be too close to the brook. The town was advised that these and one or two other minor features should be corrected.

At that time there was some anticipation that lumbering operations would shortly be inaugurated upon this watershed but fortunately thus far such has not occurred.

LEBANON

The intake for the Lebanon Village Precinct supply is in a canal leading from the Mascoma River, the raw water being subjected to mechanical filtration and chlorination. There is however a by-pass which permits of untreated water being pumped direct to the reservoir in emergency and unfortunately the chlorinator is so connected up that it is not possible to treat either this or the contents of the storage well should a situation necessitating this arise.

During the spring of 1922 the pumping station tract was inundated, the filters put out of commission and the storage well,

*See page 27.

which is an old filter gallery adapted to this purpose, was flooded, with the result that for a period untreated water was delivered to the consumers. Under the circumstances and in view of the fact that there are three pump inlets in the well, the recommendation has been made that a duplicate chlorinator be installed and the original rearranged so that whichever pump is operated chlorination can at all times be applied at the pump inlet direct instead of at the filter outlet only, as at present.

At the present time the arrangement is such that neither the alum nor the chlorine dosage can be applied with the desired precision.

At West Lebanon the supply of the Hartford Water Company, derived from two reservoirs on the Vermont side, failed during the fall of 1921 and it became necessary for a period to resort to the "Boston Lot" reserve supply, this being a newly impounded reservoir situated off the Hanover road one mile above West Lebanon. Hitherto because of the extremely mucky character of the reservoir bottom, it has been found practically impossible to use this water, but during the past two or three years a material improvement in quality has occurred.

MANCHESTER.

Because of the importance which attaches to the water supply of New Hampshire's largest city and in view of certain local criticisms of an item respecting this supply as appearing in the report of the Board of 1919-20, it has seemed desirable to present here in full the report covering an inspection as made by this department on May 18, 1921.

With reference to the paragraph entitled "Industrial Connections," it should be noted that subsequent to the date of this inspection very satisfactory progress has been made in the direction of effecting installations of Factory Mutual type double checks on the fire systems involving dual sources, also in the separation of the drinking and ablutionary supply from the fire systems. At the plant of the W. H. McElwain Company, where filtered river water is employed for boiler and washing purposes, the filtration is now supplemented by chlorination.

SOURCE.

The supply is taken from two points on the south western shore of what is known as the "Back Pond," a division of Lake Massabesic separated from the main part, or "Front Pond,"

by a narrow isthmus, the intercommunicating brook being spanned by an ordinary highway bridge. The combined area of the two divisions is given as 2700 acres, somewhat more than one-third of which is comprised in the Back Pond.

RESERVOIRS.

The low pressure reservoir is a very substantial, exceptionally well constructed basin. Middle depth, 23 feet; capacity, between nineteen and twenty million gallons. Side-walls are of solid masonry and cement, and a high, well kept fence provides a tight enclosure.

The high pressure reservoir, a much smaller basin of about four millions capacity, is situated at an elevation of 200 feet above Elm Street. Plans are being matured to replace this by a fifteen million gallon structure to be located at a somewhat higher point on this hill. This will mean when completed a total distribution storage of thirty-five million gallons, as compared to the twenty-four million gallons now available.

WATER CONSUMPTION.

The present daily consumption is given as five million gallons, the population served being estimated at 80,000, representing therefore a daily per capita consumption of 62.5 gallons. Unlike as in some of our cities it is stated that but a comparatively small proportion is consumed for railroad and manufacturing use. The larger industrial plants have their own water supplies, such being derived mainly from the Merrimack and Piscataquog rivers, both highly polluted.

*INDUSTRIAL CONNECTIONS.

In this connection special attention is now being given by the State Board of Health to the matter of fire connections with the city supply, also the ensuring of an uncontaminated water for drinking and ablutionary purposes for the employees.

* See preceding page.

A survey made during 1920 afforded the following data in this respect:

Name of Plant.	Auxiliary supply.	Connections with public supply.	Drinking water.	Wash water.
W. H. McElwain Co., Central Plant	Merrimack River	three	1 City	2 River
Manchester T. L. & P. Co., Brook Street Station....	Merrimack River	two	3 fire system	3 fire system
Manchester T. L. & P. Co., Kelley's Falls Station....	Piscataquog River	one	3 fire system	3 fire system
Devonshire Mills	Merrimack River	two	.....	.....
United States Bobbin & Shuttle Co.	Piscataquog River	one	3 fire system	4 river
Amoskeag Mfg. Co.	Merrimack River	nine	1 City	2 River
Stark Mills	Merrimack River	one	1 City	1 City
Saunders Dye House	Piscataquog River	one	3 fire system	3 fire system

All of the above plants are being required to protect the city supply through the installation, in suitable test pits, of double check valves, to be tested by the water works at least twice annually, as required by law. Water for drinking and ablutionary use will be required to be from the city supply independent of the fire system, except that use of river water for washing may be permitted if such is adequately purified.

PUMPING STATIONS.

Of the two pumping stations, the older, supplying chiefly the low pressure system, is situated about a mile distant from the lake at the end of a canal, which latter leads from the lake at the Cohas Brook outlet. This canal is well banked and protected.

The high pressure station, on the lake shore, is supplied by a 24" intake pipe extending 300 feet off shore and conducting to a pump well. Both steam and electrical power are utilized for pumping.

POLICING AND SANITATION.

All of the Front Pond, as well as the eastern half of the Back Pond, lie within the town of Auburn. Consequently the adoption of comprehensive regulations by the city covering the entire watershed is not feasible and it has been found impracticable to attempt to restrict boating by the permit system, as is done in the case of the Concord supply. However, proceeding under the powers conferred by the State laws and by methods both direct and indirect, the water department has found it possible to handle effectively most of the situations arising.

1. City water from separate line, distinct from fire system.
2. River water supplying boilers, closets and wash sinks; filtered but not adequately so.
3. Fire system. Normally city supply but at times river water.
4. Raw river water.

In late years a great improvement has been effected over formerly existent boating conditions. Not only is it claimed that less than one-fourth as many boats are now in use as was the case ten years ago, but the operation of those now remaining is under strict surveillance.

Bathing in either the Front or Back Ponds is prohibited and this rule, it is represented, is rigidly enforced. A special police officer is on duty the year around and during the height of the season at the Pavillion (as the amusement resort on the Front Pond near Massabesic station is known) two or more officers patrol this section. Not only are the crowds kept back from the water's edge but the depositing of any litter or refuse matter on the shore is forbidden.

COTTAGES AND FARMS.

Indirectly as a result of the restrictions imposed, the city has found it possible to purchase and remove a large majority of the formerly existent summer camps and cottages. At the present time on the Back Pond there are but three cottages remaining on the shore.

On the Front Pond most of the remaining cottages are in a locality east of the Pavillion, known as Kimball's Point, the number here being twenty-one. There are also a few in the neighborhood of the ice house, further to the east. These are all under inspection and the drainage arrangements are calculated to avoid direct contamination of the lake.

On the Back Pond watershed there are a few farm buildings and residences but these are kept under inspection and their location is at a sufficient distance away from the shore to exclude any material likelihood of pollution therefrom. There is, however, a relatively substantial agricultural population resident upon the eastern watershed of Front Pond and that of the main brook tributary thereto, and in addition the village of Auburn is situated quite close to the eastern shore. Most of these village residences are said to be provided with septic tanks or cesspools, and it is claimed that no direct drainage therefrom enters the Lake. This feature was not investigated at this time.

As a result of the construction by the water department of a bank wall circling a cove at a point on the Back Pond, the practice once existent of watering cattle at this point has been done away with.

CHARACTER OF SHORES.

The greater part of the shore line is comparatively high, with rocky and sandy edge. Were this the case throughout, the physical quality of the water would undoubtedly be equal to that of our very best pond supplies. Unfortunately there are a number of low swampy areas, the latter being flooded to a shallow depth at periods of high water and uncovered at times of drowth, this situation being responsible for the possession by Lake Massabesic water of somewhat more color and vegetable matter than is existent, for instance, in the Lake Penacook supply of Concord and the Pleasant Pond supply of Pembroke. Filtration would of course improve the appearance materially, although the relatively large expense of such would be scarcely justified for this purpose alone.

On the Back Pond the two most extensive boggy areas are situated at the northern end, one of these reaching to the railroad at Massabesic station. Concerning the other, plans have been made for the construction of a wall which will serve to exclude a considerable number of acres of this meadow land from flowage. On the Front Pond the most extensive tract of this character is situated close to Auburn village.

CITY OWNERSHIP, FORESTATION, PATROL.

Consequent upon the policy of the water department of acquiring land and buildings upon the lower watershed areas as such became available, the city has gradually become possessed of a very extensive property, the value of which is in the hundreds of thousands and in area represents over 2700 acres. In line with the common practice in water work management, thousands of pine seedlings have been planted and these are now in various stages of growth. Eventually this will mean an asset to the city of no small value.

The total shore line of the Lake is said to be thirty-two miles. As there is a fairly good highway completely encircling the Lake, most of the way at no great distance therefrom, the work of patrol is obviously easier than it would be otherwise. However including the canal and the tributary brooks the total distance which the department must cover in its inspectional oversight is easily more than fifty miles. One of the important duties of all members of the department force when "out on the job" is to be on the lookout for any conditions or acts tending to contribute pollution. Obviously this sanitary oversight is

of itself alone no small task; to be carried out in the most effective manner such would require a large share of the time of a number of persons.

To some extent the department finds itself hampered by the fact that it not only does not have complete ownership or control of the watershed, but also that so much of the latter lies outside the city's jurisdiction. Nevertheless it is apparent that active and conscientious work on the part of the superintendent and his assistants is being done with a view to protection of the purity of the supply.

TRIBUTARY BROOKS.

While there are a number of these brooks, but three only are of such size and character as to afford any basis for apprehension, so far as these being vehicles for the conveyance of any material degree of contamination is concerned. These are:

(1) Brook having its source near the intersection of Hanover and Page Streets, and entering the Back Pond at the High Pressure Pumping Station. At Hanover Street it forms an uninviting "mudhole," closely bordered by dwellings, privies, pig pens, chicken coops, manure piles and gardens. Thence to the Lake, a distance of slightly more than a mile, its flow is through vacant and waste land. A sore spot with the water department for some time, efforts had been made to get the city to divert this brook by special sewerage construction, but as it was estimated that this proposition would entail an expense of upwards of \$75,000 this plan was not adopted. The present plan is to solve this problem through the construction of a filter at a point about one-fourth mile from the Lake, so arranged as to cause all of the brook water to seep through several feet of sand and gravel.

(2) This is a small brook bordered by a number of cottages, which flows near the pavillion and enters the Back Pond at the swampy place not far from Massabesic Station. Notwithstanding the sanitary oversight, this stream, as well as the first one, undoubtedly carries a considerable amount of filth into the Lake at times, particularly consequent upon rains and heavy showers. Other than patrol, the superintendent has no remedy to suggest.

(3) The main brook feeder for Massabesic enters the Lake near Auburn village. This stream is fed in part by a tributary from Little Massabesic Pond and by one flowing from Tower Hill Pond on the Candia line. On this watershed there are a

number of farms and dwellings. Near the outlet and close to the brook is a barn having a particularly wet cellar, the drainage from which was until recently ditched directly into the stream, while some two miles above this point a sawmill formerly used the brook as a means of sawdust disposal. However while the sawdust is no longer suffered to enter the brook, yet as going to show the need of constant oversight, it was noted at the time of our visit that a newly constructed sink drain from a nearby dwelling led directly into the stream.

CONCLUSIONS AND RECOMMENDATIONS.

While such items of contamination as cited would be most serious where a supply is taken from a brook direct or from a small pond, yet they admittedly lose very much of their significance in view of the relatively large dilution consequent upon mingling in a body of water of the size of Massabesic Lake. Not only is there the saving factor of great dilution but the purification due to storage, both in the Lake and in the reservoirs, is an important consideration. As a matter of fact, notwithstanding the numerous and varied chances for the entrance in some degree of pollution, yet our monthly analyses have in most cases failed to indicate the presence in the samples as submitted of fecal pollution, and in those cases where *B. coli* have been noted, the numbers of such were relatively small. Obviously the degree of established pollution, at least as manifested in the quality of the water as delivered in the city, is so slight as to afford no ground for material concern.

It is believed that the general sanitary control of the water works is being handled in as efficient a manner as could be desired, and beyond possibly increasing the force devoted to patrol duty, the writer has no suggestions or criticisms to offer in this respect. On the contrary, he believes that the efforts of the department to this end are worthy of commendation, as he knows this control compares most favorably with the best to be found anywhere.

Two recommendations are however made at this time, and it is hoped that the major one of these will receive the serious consideration of the Commissioners.

1. Reference has already been made to the matter of industrial connections with the city system involving a polluted secondary source of supply (Merrimack River). Action is already being taken by the department in this matter, and in fact a number of the required connections have already been

installed. Attention is particularly called to this subject at this time because of the law as enacted in 1919 and because it concerns a chance of very serious pollution of the public water supply of which the public has practically no realization whatever.

In order to prevent any possibility of back flow into the street mains of polluted river water at such times as the mill pipe system common to both supplies is filled with the latter, it is the present requirement of the State Board of Health, under the provisions of the law, that all such connections with the city supply be of the "Factory Mutual" double check type, constructed to specifications, installed in a suitable test pit (or otherwise readily accessible), and tested by the local water works department (which is responsible for such maintenance) at least twice annually, as the statute provides (Chapter 73, Laws of 1919).

The need of this precaution will be apparent when it is stated that numerous cases are on record of contamination of public water supplies through industrial connections, resulting in outbreaks of disease, as well as litigation based upon charges of negligence on the part of the water company. A good example of the chance of this in Manchester was until last year (when a standard installation was made) afforded by the case of a large industrial plant which takes its supply for fire protection, boiler use and ablutionary purposes from the Merrimack River at a point below the sewer outfalls for both the East and West sides.

Incidentally it may be as well for the water department to understand in connection with this matter of polluted secondary supplies for industrial use, that it is now the requirement of our Board (a) that drinking water for the use of employees shall in no case be taken off of the fire system or from a polluted private supply but shall be from a special line connected with the street main at a point on the *street side* of the checks; (b) that practically the same standard of purity is exacted in the case of water to be used for ablutionary purposes as for drinking. The only basis on which use of the Merrimack river water for such purpose could be tolerated would be purification by filtration and chlorination.

2. The desirability of adoption by the city of the modern plan of chlorination of surface water supplies. So far as sanitary oversight is concerned the Manchester supply is about as carefully guarded as is feasible, under the circumstances, yet

we all know that the general situation is not ideal, involving as it does a body of water situated at the doors of a good sized city and in a relatively populous section of the state; used in considerable degree as a pleasure resort; with a number of camps and cottages still remaining; with farms and farm buildings contributing their quota of contamination to the watershed; with the village of Auburn on its shores and with two or three brooks serving as avenues for the conveyance of both established and incidental forms of pollution. The inspection force cannot be everywhere all of the time.

Admittedly our monthly samples are generally indicative of a satisfactory sanitary condition. Such analyses, however, apply only to the immediate period represented. They do not show that there was not pollution on some day the week previous, nor do they guarantee that there will not be pollution in the week to come. The spring thaws and particularly the heavy showers of summer mean a sudden scouring of the shores, with an inpouring into the Lake of any filth or refuse deposited thereon.

The practice of water supply chlorination is now thoroughly established. Not only are practically all filtered supplies now thus additionally treated but with very many others sole dependence is placed upon this variety of purification. Notwithstanding that the New York City water supply is from very pure sources, yet all of this is so treated. Chlorination serves to render the water practically sterile, removing as it does all of the bacteria of the sewage type, as well as from 90 to 99 per cent of those normally present in surface waters. In short it represents an inexpensive measure of insurance, a common sense precaution, that the city would be amply justified in invoking.

Properly applied, chlorination does not affect the odor or taste of the water in the slightest degree, nor in fact does it *permanently* impart any chemical not already present, this for the reason that it decomposes and unites to form inert chlorides long before the water reaches the consumer. The absurdity of the notion that such treatment might serve to render water hard or otherwise objectionable is apparent when it is appreciated that the ordinary dosage is as little as three or four pounds for ten million pounds of water.

The cost is but nominal. That for the installation would be under a couple of thousand dollars, while the expense of daily operation would be under a couple of dollars. The greatest

value of chlorination would be in the extra protection it would afford in connection with the sudden influx of filth into the Lake inevitably consequent upon every storm and spring thaw.

It is suggested that in connection with any consideration or discussion of this matter it is our experience that it is just as well not to advertise such a proposition to the general public, because of the unfounded prejudice, based upon lack of understanding of the facts, which the latter is apt to manifest concerning what it chooses to refer to as "medication" or "dosing" of the drinking water. In such a matter imagination is a very large factor. Thus cases are on record where chlorination had been practiced for months without any suspicion or complaint on the part of consumers, although a "funny taste" was noticed immediately by certain persons once they became aware of the practice,—and this although the treatment was not in operation at the period involved in the complaint.

CHAS. D. HOWARD.

A summarization of results of bacteriological examination of 143 samples collected during the biennial period from faucets in various parts of the city and from the distribution reservoirs direct shows that three of these, equivalent to 2.1 per cent., showed the presence of organisms of the *B. coli* group in one c. c. inoculations, while of 288 ten c. c. portions inoculated 89, equivalent to 31.2 per cent., afforded positive findings. In view of the federal requirement for train use, which makes no allowance for one c. c. positives and which provides that not more than 20 per cent. of the ten c. c. inoculations shall demonstrate the presence of coli, it is obvious that the degree of fecal contamination as noted for the entire period is somewhat in excess of the limits as recognized by authorities, and it appears that it also exceeds that for any other of our cities.

At the same time this does not necessarily mean any serious degree of contamination, one that need excite material concern, but it does suggest a tendency in that direction. The fact that many more Manchester samples have been examined than has been past practice has undoubtedly served to give a more accurate picture of conditions and for this reason comparison of these results with those for the other cities may not be altogether fair, although nevertheless warranted with due allowances.

On the other hand the bacteria counts, indicative of the total numbers of bacteria of all species growing at body temperature

have as a whole been quite satisfactory. In but three instances have these exceeded the federal limit of 100 per c. c. and most of the samples have shown much less than this number.

In the report of inspection reference appears to certain brooks entering the lake. Following are results of examination of the only samples which have been collected and which are representative of a few of these sources.

Results of Bacteriological Examination of samples from Brooks,
in Relation to Massabesic Lake.

No.	Collected.	Source.	B. coli.		B. coli, 10 c. c.		Bact. per cc. @ 37° C.
			0.1 cc.	1.0 cc.	No. portions inoculated.	No. positive.	
1921							
19683	Sept. 19	Lake outlet	0	+	2	2	....
1922							
20557	June 20	Brook near H. S. Station	+	+	1	1	1750
20558	June 20	Brook entering Lake near Park	+	+	1	1	450
20559	June 20	Brook in Auburn near old mill..	+	+	1	1	220
20596	June 25	Brook entering Massabesic ...	+	+	1	1	....

These results, as well as chemical data not here shown, serve to indicate that on the dates in question these brooks were seriously polluted and were conveying material amounts of contamination into the lake. In this connection it is understood that provision has been or is to be made for filtration of one of these brooks. It should be appreciated, however, that at the very times when there would be the greatest need of this expedient, viz., during winter thaws, spring freshets and violent showers, i. e., those times when the volume of water in the brook would be suddenly and very materially augmented, such a situation would tend to place a device of this character, unless of extensive construction, practically out of commission, so far as achieving any effective purification is concerned.

MILFORD.

Referring to the recommendations as contained in the Report of the Board for 1919-20, the town has proceeded to carry these into effect. During 1921 an up-to-date filtration plant for

effecting deferrization of the well water supply was constructed. The plant, which has a capacity of 300,000 gallons per day, includes a coke prefilter designed to operate at the rate of 50,000,000 gallons per day, two covered slow sand beds with a combined capacity of 10,000,000 gallons, and a filtered water reservoir, the filtered water being pumped, as in the past, to the standpipe.

The operation of this equipment is proving very successful in accomplishing the results for which it was designed. Prior to its installation the presence of iron, with accompanying growths of crenothrix, had proved quite troublesome.

NASHUA.

As a rule, from the standpoint of service and more adequate protection of the purity of the source, municipal is to be preferred to private ownership. But in the case of a few of our privately owned water systems, words of commendation rather than of criticism are deserved, and the system of the Pennichuck Water Works is notably one of these.

In addition to the spring water supply there is an auxiliary system drawn upon in emergency and representing a chain of ponds draining uninhabited watersheds. Because of the danger under unusually high water conditions of some of this pond water (although of fair physical quality and unexposed to other than incidental contamination) entering the spring water collecting basin, during 1920 a chlorinator was so installed as to treat not only this overflow but also the regular spring supply. Though not really needed for the latter source yet because of the trifling expense it involves, and its value as a further check against any accidental contamination, the entire supply as pumped to the distributing reservoir is regularly so treated.

Of 31 ten c. c. portions examined for the presence of *b. coli*, one, equivalent to 3.2 per cent., afforded a positive result.*

While the drinking water supply for the operatives of the Nashua Manufacturing Company has for some years been taken from a separate line off of the city supply and independent of the fire system, that as used for ablutionary purposes has been derived from a canal used for power and fire protection. This canal intercepts the Nashua river at Mine Falls, a point some distance above the city. While investigation showed that there was not much likelihood of any extensive contamination enter-

*See page 27.

ing the canal itself yet in view of the pollution known to enter the river at various points in Massachusetts, the company was notified that this water could not be deemed of satisfactory quality for washing purposes.

As the company was disposed to dissent from this view, samples for examination were collected at various periods, the results, as here presented, being indicative of too extensive a degree of fecal pollution to warrant use of this water for the purpose mentioned.

Results of Bacteriological Examination of Samples from Canal
of Nashua Manufacturing Company, intercepting Nashua
River at Mine Falls.

Number.	Date.	B. coli.			
		10 cc.	1 cc.	0.1 cc.	0.01 cc.
1920.					
18657	Dec. 15	+	+	+	0
18658	Dec. 15	+	+	+	0
18659	Dec. 15	+	+	0	0
1921.					
18692	Jan. 5	+	+	+	0
18810	Feb. 14	+	+	+	0
18886	March 14	+	+	0	0
19054	May 16	+	+	0	0
19164	June 22	+	+	+	0

The company has subsequently informed this department that it has rearranged its pipe system so as to provide the city water for both drinking and ablutionary purposes.

NORTHUMBERLAND.

Since the last report two new mountain brooks, known as the Hughes and the Brunell, have been added to the Groveton system. All four brooks are off the Pilot Range, all traverse uninhabited watersheds and all represent excellent water. Water is now led from Brunell Brook through 2900 feet of pipe into the channel of Hughes Brook, thence through 2400 feet of pipe into the Moore Brook channel.

The logging operations have been concluded and a recent sanitary survey indicated a generally satisfactory condition of the watershed at the present time. The only item of criticism was the fact that a herd of ten or twelve cattle have too close access to the neighborhood of the Hayes Brook intake.

PETERBOROUGH.

Late in 1920 a dry-feed type chlorinator was installed for the purpose of treating that portion of the supply derived from Sharon and Town Line Brooks.

A water system has been provided for the village of West Peterborough, consisting of a reservoir which is filled from the Peterborough system, supplemented by a smaller spring-fed reservoir.

PITTSFIELD.

The supply of the Pittsfield Aqueduct Company is taken from Berry pond, having an area of about thirty acres, the distributing reservoir, with capacity of one and three-fourth million gallons and located about a mile below the pond, being served by an open brook flowing from the latter.

Sanitary surveys made in October, 1920, and again in September, 1921, showed conditions about the pond to be satisfactory, the watershed being uninhabited. Conditions on the brook above the reservoir were, however, unsatisfactory, there being a number of points where contamination, principally representing drainage or wash from garden or cultivated land, and in two cases in considerable amount, had access. The company was advised that it had the option of two remedial courses, viz.: (1) installation of a pipe line from the pond to the reservoir, or (2) control through purchase of the property now occasioning contamination.

Apart from the above considerations there is some complaint at times of odor and taste, due to algae growths. An objectionable situation in connection with this system, although one representative of a not uncommon arrangement with many of our towns in earlier times is that involving opportunity for serious contamination of the public water system through the introduction of polluted river water from the pipe system of the Pittsfield Mills, connected therewith. In addition to the absence of any modern protective devices for insuring that this river water shall not penetrate into the public system whenever the fire pump is inspected, there is a by-pass, with gate, permitting of direct pumping into the latter at times of fires. Thus far the company has failed to take suitable action in this connection.

PORTSMOUTH.

The main supply of the Portsmouth Water Works is derived from two series of driven and drilled wells, known respectively as the Sherburne and Haven systems. These, while representing water of high organic purity and subject to no criticism other than the minor one of carrying a degree of hardness above the New Hampshire average, have proved inadequate and during 1920 the construction of two large special wells of the Layne & Bowler type was completed and the water turned into the system. These are operated by individual electric pumps, the discharge being into the mains direct.

While our examinations have thus far been indicative of water that is clear, clean, free from iron, and from any evidence of active pollution, the presence of an excessive proportion of nitrates has been uniformly demonstrated and as it would appear that this must signify a communication of the ground water in this locality with farm buildings or cultivated land (although not discoverable by inspection), it was specified as a condition of approval that this portion of the supply be chlorinated as a precaution against a possible development at some time of active pollution. This treatment was accordingly made a part of the new well system.

Of the 27 ten c. c. portions representing faucet samples as collected at various times during the period and examined for the presence of colon bacilli, all afforded negative results.*

RAYMOND.

The public water system, operated by the town, has been repeatedly proved to be of distinctly unsatisfactory character from a sanitary standpoint and the town has been notified that unless suitable action toward its improvement is taken the Board will be compelled to condemn it as provided by law.

Notwithstanding that results of examination have uniformly indicated the existence of seepage from some such agency as cesspools, privies or stables, and although inspections have served to confirm these findings, as showing the likelihood of such being existent, there is an apparent local skepticism on this point, accompanied by an obvious reluctance to take action.

The system in question consists of a series of driven wells situated in a marshy tract near the bank of the Pawtuckaway river, this tract being inundated at periods of high water. Past

*See page 27.

inspections have tended to show that these wells are in bad shape. Beyond question seepage from the buildings situated above is reaching these, a mitigating feature being in the fact that this has to penetrate a sand and gravel stratum, the result being that the organic character of the water is not inferior and the chief local criticism seems to be in connection with iron trouble as experienced at points of weak circulation.

As relatively very few samples are examined a year, data serving to indicate the actual bacteriological character of the water from week to week is lacking. However, on this point it is significant that of the four samples received during the period covered by this report, one, equivalent to 25.0 per cent., showed the presence of fecal bacteria in the one c. c. inoculations, while of 7 ten c. c. inoculations, 4, or 57.1 per cent., were positive.*

ROCHESTER.

A survey on June 9, 1921, of the supply of the Rochester Water Works, operated by the city, afforded the following information.

Sources of supply are (a) the reservoir, so called, an artificially formed body of water of fifty-five acres with but one very small entering brook, and (b) Round Pond, ninety acres, all except the eastern edge of which lies within the town of Barrington, being five miles distant from the city in a southwesterly direction. Altitude above city, one hundred and forty feet. Shores mainly rocky and sandy. Watershed largely open land. A little pasturage on south side. One farm on west side, also a second set of farm buildings unoccupied. Immediate shore line mainly wooded, with no mowing or cultivated land bordering water. Entirely spring-fed, no entering brook. Is in a comparatively isolated locality, inaccessible to city. Rules against bathing, boating and fishing said to be strictly enforced. This water is conveyed to the city through this reservoir but has no connection therewith. The reservoir is also in an unfrequented locality, the watershed being mainly wooded. Shores in fairly good condition although westerly side from which an outlet brook leads inclines to be swampy. City owns a little land on the north side, also the shore line for a distance of "three feet above high water mark." Most of this is fenced and while there is one small pasture, cattle do not have

*See page 27.

access to the water, whereas in the case of the Round Pond pasture they do use the pond as a drinking place.

In view of the tendency to odor and taste development in both the pond and the reservoir supplies during the summer months, due to growth of algae, it has been the practice of the management for some years to apply the copper sulphate treatment,—this usually sometime during July or August. Ordinarily a single treatment per season suffices to prevent such a degree of odor and taste development as to give rise to complaint. From four hundred to five hundred pounds of copper sulphate are required per treatment.

In connection with this supply a poor situation involving the plant of the Rochester Woolen Company (now Old Colony Woolen Mills Company) was discovered, wherein not even the time-honored but fallacious "protection" supposed to be afforded by the now obsolete type single check valves was found to exist. As the normal city pressure at this point is sixty pounds while the fire pump, which is started up twice annually and which draws from the Cocheco River, develops ninety to one hundred pounds, it is evident that at such times of pumping, notwithstanding the precautions presumed to be taken to prevent this, there is a chance of river water penetrating into the town system.

The argument that the river is used as a source of ice supply, and therefore, cannot be very unsafe for drinking purposes, is not a sound one. This river receives all of the sewage of Farmington, seven miles above. However objectionable it may be to cut ice from a sewage-polluted source, yet the ice is one thing and the direct use of the water for drinking purposes is quite another.

Of eleven samples examined bacteriologically none showed *b. coli* in one c. c., while of the twenty-two ten c. c. inoculations, two, equivalent to 9.1 per cent., were positive.*

SOMERSWORTH.

The system, operated by the city, has its source in the Salmon Falls River. It includes a covered slow sand filtration plant, which has the distinction of being the second of its kind to be erected in the United States. Another unique feature is the fact not only that it utilized the first chlorinator for treatment with chlorine gas direct to be installed in this state

*See page 27.

(1913) but this was one of the very first in this country to be regularly applied to a municipal water system.

As with the first automobiles turned out, this original installation long ago became obsolete and during 1921 it was replaced by one of modern type.

This system operates under the handicap of utilizing what is at the present time the most extensively polluted main source of supply in the state. To insure the delivery to the consumers at all times of a safe drinking water means unceasing vigilance and a scrupulous attention to details on the part of the superintendent and his assistants, although it should be said to the credit of the water department that not since filtration was supplemented by chlorination have any cases of typhoid been attributable to the water supply.

On account of this drawback the city has been recently urged to give consideration to a project which would involve taking water from Cole's pond. Briefly this would mean, as the only expense, running a two-mile line of pipe from the pond to the filter plant and pumping station, where the pond water would be filtered as usual and pumped to the standpipe. The advantages which the execution of such a plan would afford are two, viz.: (1) immunity from the necessity of using a polluted and dangerous raw water source, and (2) a water of much better physical quality.

One of the unfavorable features about the present source is that it is not only relatively highly colored but at times carries considerable suspended matter. The present filtration equipment, while believed to be the best available at the time of its construction some thirty years ago, is not of the type that would be installed today for treating a water of this character. The chief deficiency is in that it is not, like the mechanical type, adapted for effecting any substantial reduction in the amount of color, nor is it suited for handling a turbid water, particularly in the absence of any facilities for preliminary sedimentation. With the use of Cole's pond these disadvantages would be avoided. While there is some question at this time as to the sufficiency of the latter yet in the event more water was needed at times, the river source would be always available.

Of the 27 faucet samples examined bacteriologically, one equivalent to 3.7 per cent., showed the presence of *b. coli* in one c. c., while of the 54 ten c. c. inoculations made, ten, or 18.5 per cent., were positive.*

*See page 27.

STRATFORD.

In December, 1920, the new supply for the village of North Stratford, owned by the town, was placed in commission. This is a gravity system from a reservoir supplied by Kimball Brook. There is a concrete dam 150 feet long and the water is carried from the reservoir to the highway through one mile of ten-inch California redwood pipe. The brook watershed and reservoir tract is all wooded, with no habitations, pasturage or lumbering operations, and the quality of the water is highly satisfactory.

WILTON.

This supply is taken, without treatment, by gravity flow from Gaerwin Falls brook. The course of the latter is for the most part through open farm land. There are many buildings on the watershed with numerous chances for wash from cultivated land to reach the brook. The hamlet of Davisville, which includes a woodenware mill and a number of dwellings, is also situated on this stream. Therefore while but few samples are examined each year, it is not remarkable that a majority of these indicate the existence of fecal contamination. Of the four samples examined during the period, one, equivalent to 25 per cent., showed the presence of *b. coli* in one c. c. inoculations, while of the eight ten c. c. inoculations for this organism, 8 or 100 per cent., were positive.*

WOLFEBORO.

During 1921 objection was made by the United States Public Health Service to certification of the Wolfeboro supply for train use, based upon the fact that because of lack of fencing, cattle were permitted to wade into Beech pond near the intake. This condition has since been corrected.

*See page 27.

SUMMARY OF WATER SUPPLY EXAMINATIONS, BY
TOWNS, SEPT. 1, 1920, TO JULY 1, 1922.

TOWNS.	Total examinations. all sources.	Public water systems.	Semi-Public sources.	Private sources.	Analytical quality, semi-public and private sources.		Total examinations.	Lead examinations.	
					Acceptable.	Non-Acceptable.		Showing 0.050+ parts.	Showing 0.025+ parts.
Acworth	1	0	0	1	1	0	1	0	0
Alexandria	3	0	0	3	0	3	3	2	2
Alstead	2	0	0	2	0	2	0	0	0
Alton	17	10	4	3	4	3	2	0	2
Amherst	4	0	2	2	1	3	1	0	1
Andover	16	4	3	9	5	7	3	0	1
Antrim	11	5	1	5	2	4	2	0	1
Ashland	10	5	4	1	0	5	2	1	1
Atkinson	1	0	1	0	0	1	0	0	0
Auburn	4	0	0	4	1	3	1	0	1
Barnstead	1	0	1	0	0	1	0	0	0
Bartlett	16	16	0	0	0	0	0	0	0
Bath	6	4	0	2	2	0	0	0	0
Bedford	6	0	1	5	2	4	1	0	0
Belmont	35	33	0	2	1	1	1	1	1
Bennington	13	4	0	9	2	7	1	0	0
Berlin	36	29	4	3	4	3	0	0	0
Bethlehem	5	3	0	2	2	0	2	0	0
Roscawen	4	4	0	0	0	0	0	0	0
Bow	1	0	0	1	1	0	0	0	0
Bradford	10	0	0	10	3	7	9	2	2
Brentwood	1	0	1	0	0	1	0	0	0
Bridgewater	11	0	7	4	8	3	0	0	0
Bristol	22	7	1	14	9	6	6	2	4
Brookline	3	0	0	3	2	1	2	0	2
Campton	8	0	0	8	5	3	5	3	4

**SUMMARY OF WATER SUPPLY EXAMINATIONS, BY
TOWNS, SEPT. 1, 1920, TO JULY 1, 1922—Continued.**

TOWNS.	Total examinations. all sources.	Public water systems.	Semi-Public sources.	Private sources.	Analytical quality, semi- public and pri- vate sources.		Lead exami- nations.	
					Acceptable.	Non-Accept- able.	Total examina- tions.	Showing 0.050+ parts.
								Showing 0.025+ parts.
Canaan	7	3	0	4	1	3	0	0
Candia	12	9	0	3	0	3	0	0
Canterbury	3	0	0	3	2	1	1	0
Carroll	10	2	8	0	7	1	1	0
Center Harbor	1	0	1	0	0	1	0	0
Charlestown	9	9	0	0	0	0	0	0
Chatham	3	0	0	3	0	3	0	0
Chester	10	0	1	9	3	7	1	1
Chesterfield	5	0	2	3	2	3	2	0
Chichester	2	0	0	2	1	1	0	0
Claremont	26	24	0	2	0	2	6	1
Clarksville	1	0	0	1	1	0	1	0
Colebrook	19	14	1	4	3	2	5	0
Concord	70	26	4	40	16	28	11	1
Conway	25	21	1	3	2	2	0	0
Cornish	3	0	0	3	3	0	1	0
Danbury	4	0	0	4	3	1	1	0
Danville	1	0	0	1	0	1	1	0
Deerfield	3	0	0	3	2	1	2	0
Deering	1	0	0	1	1	0	1	0
Derry	18	14	4	0	0	4	1	0
Dover	46	32	1	13	5	9	0	0
Dublin	16	5	1	10	6	5	2	2
Dunbarton	9	0	0	9	2	7	3	0
Durham	13	12	0	1	1	0	0	0
Eaton	1	0	0	1	1	0	0	0

SUMMARY OF WATER SUPPLY EXAMINATIONS, BY
TOWNS, SEPT. 1, 1920, TO JULY 1, 1922—*Continued.*

TOWNS.	Total examinations. all sources.	Public water systems.	Semi-Public sources.	Private sources.	Analytical quality, semi-public and private sources.		Lead examinations.		
					Acceptable.	Non-Acceptable.	Total examinations.	Showing 0.050+ parts.	Showing 0.025+ parts.
Effingham	1	0	0	1	1	0	0	0	0
Elkins	2	0	0	2	1	1	1	0	0
Enfield	4	2	1	1	0	2	0	0	0
Fipping	4	2	0	2	1	1	0	0	0
Epsom	6	0	2	4	1	5	1	1	1
Erroll	4	0	3	1	3	1	0	0	0
Exeter	20	13	0	7	2	5	0	0	0
Farmington	22	18	0	4	0	4	2	0	2
Fitzwilliam	7	0	1	6	2	5	2	0	0
Francestown	16	10	2	4	2	4	1	0	1
Franconia	12	4	4	4	2	6	4	0	1
Franklin	35	13	2	20	8	14	11	3	5
Freedom	6	4	0	2	2	0	2	0	0
Gilford	1	0	0	1	1	0	0	0	0
Gilmanton	4	0	0	4	2	2	0	0	0
Gilsum	4	0	0	4	3	1	4	0	0
Goffstown	8	5	0	3	1	2	2	0	1
Gorham	9	8	1	0	0	1	0	0	0
Goshen	2	0	0	2	1	1	1	0	0
Greenfield	1	0	0	1	0	1	0	0	0
Greenland	4	0	0	4	1	3	1	0	0
Greenville	11	3	0	8	1	7	6	0	2
Hampstead	11	0	2	9	3	8	2	1	1
Hampton	8	4	1	3	1	3	1	0	0
Hampton Falls	1	0	0	1	1	0	0	0	0
Hancock	10	2	0	8	0	8	0	0	0

SUMMARY OF WATER SUPPLY EXAMINATIONS, BY
TOWNS, SEPT. 1, 1920, TO JULY 1, 1922—*Continued.*

TOWNS.	Total examinations. all sources.	Public water systems.	Semi-Public sources.	Private sources.	Analytical quality, semi-public and private sources.		Total examinations.	Lead examinations.	
					Acceptable.	Non-Acceptable.		Showing 0.050+ parts.	Showing 0.025+ parts.
Hanover	12	12	0	0	0	0	2	1	1
Harrisville	6	0	2	4	2	4	1	0	0
Haverhill	61	40	15	6	13	8	11	0	3
Hebron	10	0	10	0	6	4	0	0	0
Hienniker	8	3	0	5	1	4	2	1	1
Hill	6	4	0	2	1	1	1	0	1
Hillsborough	19	5	5	9	1	13	6	2	2
Hinsdale	8	0	6	2	1	7	2	0	0
Holderness	1	0	0	1	0	1	0	0	0
Hollis	2	0	0	2	0	2	1	0	0
Hooksett	35	5	24	6	12	18	4	0	0
Hopkinton	33	8	9	16	10	15	7	1	2
Hudson	8	4	0	4	2	2	0	0	0
Jaffrey	13	3	4	6	2	8	1	0	0
Jefferson	3	2	1	0	1	0	0	0	0
Keene	47	22	1	24	6	19	11	4	5
Kingston	5	0	0	5	1	4	1	0	0
Laconia	60	32	8	20	12	16	7	1	7
Lancaster	10	9	0	1	0	1	6	1	1
Lebanon	69	61	0	8	2	6	3	1	2
Lempster	3	0	0	3	1	2	1	0	0
Lincoln	3	2	0	1	1	0	0	0	0
Lisbon	17	9	0	8	5	3	3	0	1
Littleton	16	12	1	3	3	1	1	0	0
Londonderry	3	0	1	2	2	1	1	0	0
Loudon	5	0	0	5	0	5	1	1	1

SUMMARY OF WATER SUPPLY EXAMINATIONS, BY
TOWNS, SEPT. 1, 1920, TO JULY 1, 1922—Continued.

Towns.	Total examinations. all sources.	Public water systems.	Semi-Public sources.	Private sources.	Analytical quality, semi-public and private sources.		Total examinations.	Lead examinations.	
					Acceptable.	Non-Acceptable.		Showing 0.050+ parts.	Showing 0.025+ parts.
Lyme	9	3	1	5	4	2	8	1	1
Lyndeboro	5	0	1	4	2	3	4	2	3
Madbury	1	0	0	1	1	0	1	0	0
Madison	3	0	2	1	0	3	0	0	0
Manchester	187	161	3	23	9	17	16	1	1
Marlboro	3	0	1	2	3	0	1	0	0
Marlow	5	0	0	5	2	3	4	2	2
Mason	1	0	0	1	0	1	0	0	0
Meredith	19	7	3	9	4	8	1	0	0
Merrimack	17	10	0	7	1	6	0	0	0
Milan	14	0	1	13	7	7	5	0	1
Milford	33	21	4	8	3	9	2	1	2
Milton	3	0	0	3	0	3	1	0	0
Mont Vernon	6	0	2	4	1	5	4	1	1
Moultonborough	1	0	0	1	0	1	1	0	0
Nashua	41	29	2	10	5	7	0	0	0
Nelson	2	0	2	0	1	1	0	0	0
New Boston	5	3	0	2	0	2	5	1	3
Newbury	2	0	1	1	0	2	1	1	1
Newfields	5	0	0	5	2	3	0	0	0
New Hampton	6	3	0	3	1	2	1	0	1
New Ipswich	8	0	0	8	3	5	6	0	5
New London	5	1	1	3	1	3	2	0	0
Newport	13	3	0	10	4	6	5	0	1
Newton	6	0	0	6	1	5	1	1	1
North Hampton	3	0	0	3	1	2	0	0	0

**SUMMARY OF WATER SUPPLY EXAMINATIONS, BY
TOWNS, SEPT. 1, 1920, TO JULY 1, 1922—Continued.**

TOWNS.	Total examinations. all sources.	Public water systems.	Semi-Public sources.	Private sources.	Analytical quality. semi-public and private sources.		Total examinations.	Lead examinations.	
					Acceptable.	Non-Acceptable.		Showing 0.050+ parts.	Showing 0.025+ parts.
Northumberland	13	12	0	1	1	0	0	0	0
Northwood	4	0	0	4	0	4	0	0	0
Orange	1	0	0	1	1	0	0	0	0
Orford	3	0	1	2	1	2	3	1	3
Ossipee	14	6	4	4	4	4	1	0	0
Pelham	1	0	0	1	0	1	0	0	0
Pembroke	7	3	0	4	2	2	1	0	1
Peterborough	32	15	7	10	3	14	9	3	5
Piermont	3	0	0	3	2	1	2	0	1
Pittsfield	11	5	0	6	2	4	1	0	0
Plainfield	8	6	0	2	0	2	1	0	0
Plaistow	4	0	2	2	1	3	0	0	0
Plymouth	28	16	1	11	4	8	5	2	2
Portsmouth	49	24	7	18	10	15	1	0	0
Quincy	1	0	0	1	0	1	1	1	1
Raymond	11	4	2	5	3	4	1	0	1
Rindge	11	0	0	11	2	9	0	0	0
Rochester	14	11	1	2	1	2	1	0	0
Rollinsford	12	10	0	2	0	2	0	0	0
Rumney	16	0	2	14	8	8	12	2	6
Rye	3	0	0	3	2	1	0	0	0
Salem	13	4	2	7	4	5	0	0	0
Salisbury	5	0	0	5	3	2	0	0	0
Sanbornton	7	0	0	7	2	5	3	0	0
Sandwich	4	0	1	3	0	4	0	0	0
Seabrook	1	0	0	1	0	1	0	0	0

SUMMARY OF WATER SUPPLY EXAMINATIONS, BY
TOWNS, SEPT. 1, 1920, TO JULY 1, 1922—*Continued.*

TOWNS.	Total examinations, all sources.	Public water systems.	Semi-Public sources.	Private sources.	Analytical quality, semi-public and private sources.		Lead examinations.		
					Acceptable.	Non-Acceptable.	Total examinations.	Showing 0.050+ parts.	Showing 0.025+ parts.
Shelburne	1	0	1	0	1	0	0	0	0
Somersworth	51	40	5	6	2	9	0	0	0
South Hampton	1	0	0	1	1	0	0	0	0
Springfield	11	0	8	3	4	7	1	0	0
Stewartstown	8	5	0	3	2	1	1	0	1
Strafford	1	0	0	1	1	0	1	0	0
Stratford	5	4	0	1	0	1	1	0	0
Stratham	4	0	0	4	1	3	0	0	0
Sullivan	2	0	0	2	0	2	0	0	0
Sunapee	12	11	1	0	0	1	0	0	0
Sutton	5	0	0	5	0	5	2	0	0
Swanzey	4	0	1	3	1	3	0	0	0
Tamworth	8	0	2	6	4	4	0	0	0
Thornton	1	0	0	1	1	0	1	0	1
Tilton	16	5	1	10	6	5	3	0	0
Troy	10	4	0	6	2	4	4	0	0
Tuftonboro	7	0	0	7	1	6	0	0	0
Unity	2	0	0	2	0	2	1	1	1
Wakefield	21	0	4	17	3	18	6	5	5
Walpole	13	4	5	4	2	7	4	1	1
Warner	17	3	4	10	6	8	3	0	1
Warren	5	0	1	4	2	3	3	1	1
Washington	2	0	0	2	1	1	0	0	0
Weare	23	0	1	22	5	18	8	1	3
Webster	4	0	0	4	0	4	0	0	0
Wentworth	9	0	1	8	4	5	7	1	1

**SUMMARY OF WATER SUPPLY EXAMINATIONS, BY
TOWNS, SEPT. 1, 1920, to July 1, 1922—Concluded.**

TOWNS.	Total examinations. all sources.	Public water systems.	Semi-Public sources.	Private sources.	Analytical quality, semi-public and private sources.		Total examinations.	Lead examinations.	
					Acceptable.	Non-Acceptable		Showing 0.050+ parts.	Showing 0.025+ parts.
Westmoreland	4	0	0	4	2	2	3	0	1
Whitefield	7	5	1	1	2	0	1	0	0
Wilmot	4	0	4	0	1	3	0	0	0
Wilton	20	4	1	15	5	11	10	4	7
Winchester	21	0	2	19	3	18	11	3	7
Windham	1	0	1	0	0	1	1	0	0
Wolfeboro	10	5	2	3	2	3	0	0	0
Woodstock	6	3	0	3	2	1	1	0	0
Totals	2,236	1,066	260	910	421	749	380	71	147

REPORT OF THE SANITARY ENGINEER

Charles L. Pool

Report of Sanitary Engineer

DR. CHARLES DUNCAN,
Secretary, State Board of Health,
Concord, N. H.

DEAR SIR: Herewith is submitted the report of the Sanitary Engineer for the period beginning June 6, 1921, with the assumption of the duties, to June 30, 1922, the end of the biennial period.

While Sanitary Engineering work by the State Board of Health has been well established in New Hampshire for many years, the amount done was increased with the advent of provision for the application of the full time of a trained individual to this work. Furthermore, it has indirectly caused an increase in work done in some other departments, since it has relieved to a considerable extent the devotion of time from those departments to Sanitary Engineering problems.

DUTIES.

The writer was directed to take charge of field inspection of water supplies, under the immediate supervision of the Chief of Division of Water Supplies, Foods and Drugs, and of the rest of the work of a Sanitary Engineering nature, under the immediate supervision of the Secretary. Also he was appointed Collaborating Sanitary Engineer with the United States Public Health Service for duties in connection with the certification of water supplies of this State used for drinking and culinary purposes in interstate traffic.

FIELD WORK.

For the greater part of the early summer of 1921 the field work was done in company with the State Board of Health Inspector. At that stage it did not matter greatly which territory was covered first, and this arrangement proved very economical and efficient. One conveyance sufficed and the writer was able

to inspect public water supplies while the Inspector covered other matters in a town. It was also possible to assist the Inspector in many cases such as during inspections of hotels, summer camps, etc., where the outside features, water and sewage, were inspected simultaneously with his investigation into the inside features, food handling, etc. A large amount of work was done in this connection which is not included in the summary below, since it was all duly recorded by the Inspector on the card index system.

This temporary arrangement took the writer to all parts of the state and was of great value in his becoming familiar with "the ground." A number of inspections of public water supplies were also made with the Chief of Division and these proved invaluable in connection with gauging the requirements of the state for a satisfactory supply.

The following is a summary of field work done during the period:

Public Water Supply Inspections, special investigations, sanitary surveys, purification plant investigations, etc.	83
Similarly for semi-public water supplies.....	7
Sewerage investigations	24
Inspections of public summer camps.....	35
Miscellaneous investigations of other problems....	11
<hr/> Total	160

WATER SUPPLIES.

On water supply investigations, reports both written and verbal have been made from time to time to the Chief of Division, and since he is fully treating of that matter in the biennial report as has been the custom, no comment is offered here.

SEWERAGE.

As to sewerage investigations, a few observations may be pertinent. Two particular classes of problems have repeatedly demanded attention. One of these is the disposal of sewage by institutions, hotels, boarding houses and other isolated units which do not have access to a public sewer. The other is the sewerage of smaller towns.

For the former the tight septic tank as developed in New Hampshire has been of inestimable value. But it has been necessary time and time again to counteract the opinion that it can be used under any conditions and the effluent disposed of anywhere. It has so often, fortunately, been the case that a septic tank has been installed a number of years ago and no more consideration given since to sewage disposal, that it has led to the spread of the above opinion.

Many cases have been prevented where the installation of a septic tank would have led to disappointment, and in a greater number of cases the septic tank has been recommended in preference to other methods of sewage disposal.

The twenty-four sewerage investigations noted in the above summary were all special investigations following requests for assistance from this department. In addition it has been possible to do a large amount of work of this character during inspections of camps and surveys of pollution of lakes.

In straightening out systems in use which are giving trouble, it has been noted that where difficulties with septic tanks were encountered the trouble was nearly always in the disposal of the effluent, and in a few cases, in the failure to follow to the letter the detailed instructions given in the bulletin published by the State Board of Health.

Another type of sewage disposal which has given widespread satisfaction where the conditions were favorable is the chemical closet.

In the case of town sewer systems, a costly practice was found to be of extremely common occurrence. A town increases the amount of water consumed. An increase in the volume of sewage to be disposed of follows: Boarding houses, hotels, institutions, private residences, begin to dispose of their sewage in various ways. The town may put a pipe somewhere to carry off some of the sewage. Later it is desired to run more sewage into this pipe. The pipe usually proves to be too small, too high, or too something else. Sooner or later the evolution costs someone many times what it should have cost. Examples of such cases are Meredith, Derry, Wolfeboro, Greenville and The Weirs. The numerous towns that are in various stages of this predicament should have designs of sewer systems. These designs should cover the whole area to be ultimately sewered, and when sewer pipes are to be laid, sections of this complete system should be constructed, even if the pipes are a little too large or a little too deep for immediate purposes. It is believed that

this department should do everything possible to secure such procedure. Failure to do so is indirectly costly to the state and health conditions are not so good as would be the case if the towns anticipated these problems properly.

It is understood that the President and Consulting Sanitary Engineer of the Board is considering the question of legislation covering the requiring of submission of plans to this department concerning installation and extension of sewerage systems. While doubtless the principal value of such legislation would be the prevention of further disposing of sewage in such a manner as to harm the state as a whole, it might also make possible the prevention of further waste of money by the costly practice just described.

While it has greatly added to the confidence of the writer in attacking these various sewerage problems encountered, to know that in cases of special difficulty the long experience of the Consulting Sanitary Engineer of the Board would be available, it has thus far not been necessary to trouble him in this connection.

PUBLIC SUMMER CAMPS.

A survey of sanitary conditions at the public camps in the state was commenced at the direction of the Secretary. The particular class of camps referred to is the institution of summer communities of twenty to two hundred boys or girls in charge of an organization such as a school, religious association, etc., or in charge of private individuals.

Record of one hundred and fifty-six of these has been accumulated and about one-half of the total has been inspected by the Inspector, the writer, or both. Usually these camps manage to locate in some remote place, involving separate water supply and sewage disposal systems of their own. Without exception these camps have been found to be in charge of responsible individuals, fully capable of taking good care of the health of the children and they are an institution which does an immeasurable amount of good in improving the health of a large number of children.

Nevertheless, it has been found in a number of instances that minor corrections were necessary, and where it has been possible to already follow up suggestions made by us, it has been found that these have been fully executed.

It is not believed desirable to arrange an annual inspection of these camps,—in fact, with present facilities it is impossible—but it is thought desirable that they should all be inspected by this department. Our coöperation makes possible a thorough treatment of each; the food handling and storage, kitchen, etc., can be given particular attention by the Inspector, while the writer can be of value in water supply and sewage investigation. After the inspection of one of us, the other can be notified what to look for on his subsequent inspection.

POLLUTION OF LAKES.

As to the miscellaneous investigations noted in the summary, only the surveys to determine pollution of lakes will be mentioned at this time. Work has been done on Spofford, Newfound and Winnepesaukee lakes. The former was done with the Inspector and he has subsequently extended it. Newfound Lake was subjected to a preliminary survey by us in 1921, when twenty-four unfavorable conditions were noted. In 1922 the writer visited every dwelling about the lake and of the twenty-four noted in 1921, ten had complied with requirements. Next summer it will probably be necessary to go further than recommending changes for the worst of the remaining offenders.

The principal point of these surveys was in connection with enforcing the regulations for the different lakes, promulgated by the State Board of Health for the purpose of maintaining the high standard of purity that the waters of these lakes enjoy. Incidentally other sanitary features were gone into on these surveys. In particular a campaign was inaugurated against the numerous privies about Newfound, of the ordinary type in which the dejecta is allowed to accumulate on the surface of the ground exposed to flies.

The survey of Winnepesaukee is more extensive in problems involved and in size, than for the others, and it is only noted at this time that at the end of the biennial period the survey was well under way.

An important point about maintaining the purity of the waters of the numerous lakes similar to these is that most of them are virtually water supply reservoirs. Public water supplies are derived from Winnepesaukee and Newfound, and in most of the others where a large summer population exists, it is common to find that hotels, camps, boarding houses and private dwellings have water supply sources in the lakes.

CONCLUSION.

From comparison of descriptions of conditions as given in publications of various state health organizations, with those as observed throughout this state as a whole, it may be stated that sanitary conditions in New Hampshire are on a high plane. This is due in no small measure to the State Board of Health. And throughout the state the closest coöperation was found to exist between the municipal officials concerned in public health work and the State Board of Health, and it has been earnestly endeavored to uphold, on the inspection tours, the enviable prestige that this State Board of Health has faithfully built up through the years.

In conclusion I desire to express my appreciation of the courteous assistance given me by all the officials with whom I have come in contact in the discharge of my duties, both in the office and in the field.

Respectfully submitted,

CHARLES L. POOL,
Sanitary Engineer.

**REPORT OF THE BACTERIOLOGICAL, PATHO-
LOGICAL AND SEROLOGICAL DEPARTMENTS,
N. H. LABORATORY OF HYGIENE**

Clara Israeli, M. D., Pathologist.

Report of the Bacteriological, Pathological and Serological Departments, N. H. Laboratory of Hygiene

DR. CHARLES DUNCAN,
Secretary, State Board of Health,
Concord, N. H.

SIR: I have the honor to present the biennial report of the work done by the department in Bacteriology, Serology, Pathology, Animal Pathology and Clinical Pathology of the Laboratory of Hygiene from September 1, 1920, to June 30, 1922, giving the following figures:

Total number of specimens examined.....	16,581
Bacteriological	9,152
Pathological tissues	517
Clinical pathology	531
Animal pathology	60
Postmortem examinations	23
Serological	6,298
Specimens unsatisfactory for examination	247

Specimens not giving any data and those submitted but not examined are not included in this report. A detailed and classified report is given in the back part of this report.

The total number of outfits prepared and sent out to the different institutions and individual physicians is...	19,271
Diphtheria	4,159
Wassermann	6,149
Tuberculosis	5,820
Typhoid	699
Slides for blood smears and gonorrhoea.....	2,444

This department of the Laboratory of Hygiene has rendered services to the public to some extent beyond its capacity and that this service is appreciated by the medical profession and

by the public is evidenced by the increasingly large amount of various specimens which are submitted to the Laboratory for examination. Sometimes it is impossible to hand in a diagnosis in as short a time as we would like owing to the fact that it is difficult to attend to all the work in a reasonable limit of time more especially if the pathologist is called upon for other duties, such as postmortem examinations, or specimens of acute infectious diseases submitted for immediate diagnosis. It is, therefore, obvious that there must be some delay oftentimes in making reports, as there is only one person to do this important work. The attention of the members of the Board is called to the great need of an adequate staff to meet this emergency. The statistics given above show an increase of nearly four thousand specimens examined during this fiscal year (16,581 against 12,868), and in three months less time.

The work of the individual departments shows statistically a large increase in the number of specimens. In order that the public may have comprehensive knowledge of the work done in each department, a short sketch of the services of each division is given in the following:

SEROLOGY.

The serological work has increased one-third over that of the last fiscal year (6,298 against 4,400). It has amply fulfilled its duties. The tests done are for both diagnosis and control as a guide to treatment. The latter is as necessary as the primary diagnosis, for it is only by this means that the clinician can tell whether the number of treatments given is enough. For example, a physician, having sent in the blood of a patient for diagnosis, resulting in a positive (+4) reaction, administered the course of four treatments, took a blood and sent it in counting on it being negative. The reaction, however, was positive (+4) and when report was submitted the physician was surprised at the results, stating the patient had had four treatments. It was necessary to give a somewhat detailed explanation with caution to continue treatments until a negative reaction was attained, then to submit a specimen of blood from time to time as a control. It was only by the laboratory findings that this physician had become aware of the necessity of continued treatments.

The physicians in charge of the venereal clinics call upon this department both for the primary diagnosis and for the control cases. These cases are treated as long as the laboratory reports positive reaction. Specimens are submitted once in so often for test and when reports are positive, treatment is then instituted. This procedure is important as some cases respond to treatment easily, but many show signs of recurrence of infection. A case of this type has come under our observation—that of a marine ex-service man, who became infected after his return from service. First test was strong positive. After one course of treatment, it was negative for some time. Then he developed iritis; reaction gave a positive (+4). After another course of treatment, he became negative and his eyes cleared up. Unfortunately, his physician advised him to get married, holding that he was cured. He then demonstrated a rash, his blood gave a positive (+4) reaction, and both he and his wife had to be under treatment.

From this sketch, the necessity of follow-up work is evident. The physicians, who have had the most experience in this disease, follow up their cases and are guided by the laboratory findings. At times these physicians consult the pathologist with regard to certain cases as to advisability of treatment in certain negative control cases. This short description will serve to illustrate the evident benefit derived from this department. Complement fixation tests are done on blood, spinal fluid and pleural fluid for syphilis and gonorrhoea.

DEPARTMENT OF PATHOLOGY.

That pathological work has increased is evidenced by the fact that the number of specimens examined for diagnosis alone, those removed by surgeons, was twice the number of the last fiscal year (517 against 249). This large increase is due partly to the fact that surgeons desire a more accurate diagnosis on their cases and a more scientific report for hospital records. Physicians also send in specimens removed at postmortems for histopathological examination. We are very glad indeed to give this help here, but it may become necessary to discontinue this part of the work as it takes away the time from the primary diagnosis on tissues removed by the surgeon, which we consider of prime importance and which should have first consideration.

During the past two years six postmortem examinations were made to further establish a correct diagnosis on cases not medico-legal.

The number of postmortem examinations made for medico-legal cases is seventeen and the unbiased report of the findings helped bring to justice some who had not been suspected; in other cases we removed suspicion.

CLINICAL PATHOLOGY.

This branch includes the examination of the various fluids of the body, such as urine, feces, stomach contents, breast milk, pleural fluid, abdominal fluid, spinal fluid, blood counts, differential counts, examination of smears for anemia, malaria and other blood discreasias. Most of these examinations included both chemical and microscopic examination, as well as bacteriological,—especially the spinal fluid, which includes direct cell count, chemical test for serum albumin, serum globulin, sugar and cytolysis, animal inoculation and bacteriological investigation whenever the specimen is suitable. In pleural fluids we want especially cytolysis and animal inoculation, the latter for tuberculous infection. While we have not always been successful in demonstrating tubercle bacilli, we feel that more often the cause of pleurisy with effusion is due to tuberculous infection.

ANIMAL PATHOLOGY.

The specimens submitted to this department were from foxes, pigs, chickens and meat. In some cases we were able to give definite cause by bacteriological and histological findings, but in other instances this was not possible.

BACTERIOLOGY.

This department has conducted examinations both in routine diagnoses and in the investigation of various surgical infections, dressings, sutures, etc., also feces and urine for typhoid carriers and discharges from "pink eye" to determine organism. Cultures were sent in for examination from a number of cases of mastoiditis. The infections of most of these cases were streptococcus—short chain or mixed infection and staphylococcus aureus.

DIPHTHERIA.

The past two years has shown a decided increase in this disease in this state as well as in other sections of the country. The cities of Nashua and Manchester examined their own cultures. The investigation of the school children by cultures for carriers was turned over to the laboratory with satisfactory results as reported by the Health Officer of Manchester where a school of five hundred scholars had been closed on an average of three times during the year and after systematic culturing the scholars no more cases of diphtheria developed.

In this connection let us say that the Schick tests of the schools with subsequent immunization against diphtheria offer good results. We hope that other towns and cities in New Hampshire will undertake the Schick test as a preventive against diphtheria.

TYPHOID.

This disease must be considered from the standpoint of carriers who are far more of a menace to the public than those presenting clinical symptoms, and in locating these carriers the laboratory does very important work. We have found a number of such carriers in this state—in one case the family was selling milk which infected several persons. Feces and urine from the different members of this family were submitted to the laboratory for examination; typhoid organisms were isolated from the feces and the urine of one woman who handled the milk and who at first objected strenuously to submitting a specimen for examination. On the findings of the laboratory this family was controlled and the public protected. The value, therefore, of this work speaks for itself.

Very recently there was a threatened outbreak of typhoid at the State Hospital. Examination of the feces showed the organism to be paratyphoid. Immunization with vaccine—mostly made by us—of the triple organisms prevented any increase in the number of cases.

It also resulted in establishing a routine examination of the blood—Widal test—of all new cases entered in the hospital to locate any that are actively or passively typhoid carriers. Those which give positive reaction, feces and urine are submitted to the laboratory for the isolation of typhoid organisms. The primary diagnosis of the original cases was made by the Widal test, and cases that presented no clinical symptoms cor-

roborated by isolating typhoid and paratyphoid organisms from the feces.

The method we use in isolating the typhoid organism is for the most part one adopted by Doctor Krumwiede of the New York Board of Health, using brilliant green die plates to streak the feces and picking the colonies onto Russell's double sugar medium (using Andrade indicator) for verification.

VENEREAL DISEASES.

In the case of examination of smears for gonorrhoeal infection the laboratory intends to give all the assistance necessary in the establishment of diagnosis that this disease may be controlled. At the same time we feel that some of the examinations were unnecessary. The total examination of smears was 1,708, as against 890 of the last fiscal year. Our reason for the above statement is this: we find that smears were submitted for examination again within a week after treatment was instituted in cases where we had given a diagnosis of positive infection, and slides were submitted sometimes every other day. This procedure is unnecessary, as cases cannot be cured in a week. Cases should be treated for months and smears submitted to the laboratory for control which should be so stated on the cards. This procedure would avoid unnecessary examination.

TUBERCULOSIS.

The increase in the number of examinations is due to the fact that a large number of specimens from ex-service men were sent in to be examined for possible tuberculous infection. Otherwise, we do not think there is an increase in the number of tuberculous infections.

A few words should be said with regard to the relation with other laboratories. The New York Board of Health, both the Director and his staff, are always helpful through co-operation and supplying any special material needed for the work in the bacteriological department. The pathological department of Yale University School of Medicine has likewise been helpful. The pathological department of Cornell Medical School is equally ready to give any assistance when called upon. The

Director of the Department of Animal Pathology of the Lederle Laboratories has similarly been helpful. The pathologist fully appreciates the advantages derived from the inter-association with these laboratories and trusts the members of the Board will share in the appreciation of the advantages gained.

Respectfully submitted,

CLARA ISRAELI, M. D.,
Pathologist.

HUMAN PATHOLOGY.

Number of specimens sent in for diagnosis.....	517
Number of surgical specimens	453
Number of postmortem specimens	64
<hr/>	
Number of malignant cases	98
<i>Uterine curetings:</i>	
Adenocarcinoma	1
<i>Uterus:</i>	
Carcinoma	6
Adenocarcinoma	1
Suspicious	4
<i>Cervix:</i>	
Squamous-celled carcinoma	1
<i>Ovaries:</i>	
Carcinoma	2
Adenocarcinoma	1
<i>Breasts:</i>	
Carcinoma	17
Scirrhus cancer	4
Fibrocarcinoma	1
Spindle-celled sarcoma	1
<i>Fallopian tubes:</i>	
Carcinoma	1

<i>Vagina:</i>	
Carcinoma	2
Adenocarcinoma	1
Alveolar type carcinoma	1
Carcinoma of lip	4
" " neck	1
" " omentum	1
" " nose	1
" " face	1
" " Wharton's duct	2
" " kidney	1
" " scalp and forehead	1
" " growth on forearm	1
" " ala of nose	1
" " axillary gland	1
" " tumor of ear	1
" " parotid gland	1
" " inguinal gland	1
" " tumor from ribs	1
Adenocarcinoma of navel	1
" " prostate	1
" " stomach and duodenum	1
" " rectum	1
" (susp.) " gall bladder	1
Metastatic carcinoma of lymph node	1
" " " axillary gland	1
Scirrhus cancer of shoulder	1
Sarcoma of arm	1
" " sacrum	1
" " lumbar vertebrae	1
Recurrent sarcoma of tibia	1
Myxosarcoma of abdomen	1
Epithelioma of rectum	1
Cornified epithelioma of face	1
Epithelioma of superficial layers of lip	3
" " penis	1
" " neck	1
" " urethra	1
" " gum	2
" " vulva	3
" " tissue from maxilla	3
" " dorsum of tongue	1
" " growth from forehead	1

Epithelioma of jaw	1
“ “ tissue from navel region	1
“ “ growth from anal region	1

Number of tuberculous specimens..... 6

	Pos.	Neg.	Total.
Breast tissue	1	1
Omentum	1	1
Rectal tissue	1	1
Glands from popliteal space	1	1
Material discharged from bowels	1	1
Neck gland	1	1

Number of all other diagnoses 349

Uterine curettings:

Endocervicitis	2
Acute endometritis	6
Catarrhal endometritis	2
Interstitial endometritis	2
Hyperplastic endometritis	13
Acute suppurative endometritis.....	1
Suppurative interstitial endometritis	1
Non-malignant	1
Suppurative endometritis	5
Subacute endometritis	1
Acute infection of early pregnancy with abortion..	3
Marked suppurative endocervicitis and endometritis with hyperplasia	1
Placental tissue	2
Pregnancy with suppuration of uterine wall.....	1
Acute suppurative endocervicitis with production of polypi	1
Products of conception.....	1
Chronic productive endometritis.....	2
Productive inflammation	1
Edematous inflammation with hemorrhage.....	1
Marked suppurative metritis with degeneration..	1
Hemorrhagic endometritis	1
Pregnancy	1

Uterine curettings—Concluded.

Glandular hyperplasia	1
Chronic productive inflammation	1
Adenoma of endometrium	1
Suppurative placentitis	1
Subacute edematoid endometritis	1
Slough	1
Chronic hyperplastic endometritis	1

Uterus:

Hyperplastic glandular endometritis with suspicion of carcinoma	1
Hemorrhagic metritis (probable)	1
Passive congestion	1
Hyperplastic endometritis	7
Subacute endometritis and edematous metritis....	1
Acute hemorrhagic endometritis	2
Chronic productive endocervicitis	1
Suppurative endometritis and metritis	2
Subacute metritis and endometritis and subacute endocervicitis	1
Fibromyoma	3
Pre-cancerous condition	1
Cystic endometritis and edematoid metritis.....	1
Acute endometritis	1
Glandular hyperplastic endometritis	2
Chronic productive inflammation and desquamated endometritis	1
Fibromatosis	1
Slight endometritis	1
Fibroma	2
Edematoid hyperplastic endometritis	1
Edematous metritis	1
Myofibroma with metritis	1
Commencing fibroma	1
Connective tissue degeneration of mucous mem- brane	1

Ovaries:

Acute hemorrhagic oophoritis	5
Productive inflammation	1
Chronic cystic oophoritis	1
Suppurative oophoritis	5
Papilloma	3

Ovaries—Concluded.

Chronic oophoritis	19
Chronic suppurative oophoritis	3
Subacute oophoritis	2
Oophoritis	1
Edematous oophoritis with cystic degeneration....	1
Hemorrhagic oophoritis	5
Edema of interstitial tissue	1
Chronic edematous oophoritis	1
Pyosalpinx	1
Acute oophoritis with cystic degeneration.....	1
Cystic degeneration	1
Fibrosis with edema	1
Oophoritis with acute congestion	1
Fibromatous change	1
Cystic oophoritis	1

Tubes:

Chronic salpingitis	14
Hemorrhagic salpingitis	2
Suppurative salpingitis	5
Acute salpingitis	4
Subacute edematous salpingitis	1
Edematoid interstitial salpingitis	3
Salpingitis with congestion of blood vessels.....	1
Interstitial salpingitis	2
Pyosalpingitis	1
Atrophy	1
Chronic suppurative salpingitis	1
Chronic edematoid salpingitis	2
Salpingitis with cystic degeneration	1
Cystic degeneration	1
Interstitial salpingitis	3

Cervix:

Hyperplastic adenomatoid endometritis.....	1
Endocervicitis	3
Endocervicitis with laceration	2
Productive inflammation with laceration of cervix	1
Hyperplastic endocervicitis with mucous degenera- tion of glands	1
Chronic cervicitis and endocervicitis	3
Marked suppurative cervicitis and endocervicitis with suspicion of carcinoma	1

Cervix—Concluded.

Marked endocervicitis and cervicitis with cystic degeneration	1
Intense catarrhal endocervicitis with laceration and glandular hyperplasia	1

Breasts:

Chronic mastitis	3
Intracanalicular fibroma	4
Fibroma of mamma	4
Chronic productive inflammation	1
Rapid fibromatosis	1
Productive inflammation with fibrous change of lymph nodes	1

Appendix:

Subacute inflammation of interstitial tissue.....	1
Subacute appendicitis	9
Acute suppurative appendicitis	2
Acute hemorrhagic appendicitis	4
Chronic appendicitis with obliteration.....	3
Acute appendicitis	5
Abscess	1
Catarrhal appendicitis	2
Acute suppurative inflammation	1
Chronic suppurative appendicitis with fibrosis	2
Suppurative appendicitis	2
Chronic atrophic appendicitis	2
Distended fibrosis with atrophy	1
Obliterative appendicitis	1

Lymph nodes:

Lymph adenitis	1
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Tissue from eyelids:

Commencing epithelioma	1
Subacute chronic condition	1

Growth from mouth:

Suppurative inflammation	2
Productive inflammation	1

Tissue from rectum:

Chronic productive inflammation	1
Mucous tissue	1

Tissue from face:

Superficial epithelial growth	1
Productive inflammation with increase of epithelial cell tissue	1
Chronic productive inflammation	1

Specimens from lip:

Productive inflammation	1
Lipoma	1
Chronic productive inflammation	1

Specimens from penis:

Productive inflammation	1
Chronic productive inflammation with connective tissue changes	1

Specimens from gall bladder:

Acute suppurative cholecystitis	3
Chronic productive interstitial cholecystitis	1

Prostate glands:

Adenoma	1
Chronic prostatitis with cystic degeneration.....	2
Glandular hyperplastic prostatitis	1
Suppurative prostatitis	1
Chronic prostatitis	2

Specimens from cervix:

Papilloma	1
Chronic cervicitis	3
Productive inflammation	1
Hemorrhagic cervicitis	1

Specimens from breast:

Myxoma of mamma	1
Chronic mastitis with fibrosis of mamma.....	1
Fibroma of mamma	2
Chronic mastitis with commencing epithelioma of superficial skin layers	1
Chronic subacute productive mastitis	1

Tissues from neck:

Chronic productive inflammation with fibrosis.....	1
Productive inflammation with suppuration	1
Chronic degeneration—probably syphilitic.....	1
Marked degenerative adenitis with suspicion of tuberculosis	1

Finger specimens:

Productive inflammation with mucous degeneration	1
Chronic inflammation with fibrosis.....	1
Productive inflammation with commencing sarcoma of giant cell variety.....	1
Marked productive inflammation with suspicion of granuloma	1

Tissues from kidneys:

Parenchymatous nephritis with areas of fibrosis..	1
Adrenal adenoma	1
Pyonephritis	1
Parenchymatous and interstitial nephritis with suppuration	1

Tissue from arm:

Probably Hodgkin's Disease	1
Connective tissue tumor	1

Skin specimens:

Chronic productive inflammation, probably nevus..	1
Chronic suppurative inflammation	1

Specimens from jaw:

Caries of bone	1
Productive inflammation	1

Axillary glands:

Fat tissue and connective tissue	1
Inflammation with connective tissue degeneration	1
Chronic productive inflammation of perineal tear....	1
Productive inflammation and hyperplasia of tumor from back of knee	1
Productive inflammation with productive changes of specimen from eye	1
Chronic productive orchitis with fibrous changes of growth from scrotum	1
Chronic productive inflammation of abdomen.....	1
Chronic productive inflammation of tissue from pa- tella bone	1
Suppuration of inguinal gland	1
Chronic productive inflammation with mucous degen- eration of specimen from buttocks.....	1
Production of connective tissue of both coats as re- sult of inflammation and calcareous degeneration of femoral vessel	1

Chronic suppurative inflammation with suspicion of epithelioma of tissue from labia	1
Acute suppurative infection of stomach.....	1
Organized mucous with fibrin, pus cells and small round cells of shreds from urine	1
Marked chronic inflammation of specimen from vulva	1
Suppurative inflammation of specimen from gum....	1
Chondroma of flexor of index finger	1
Chronic productive inflammation of tongue.....	1
Chronic productive inflammation of lymph node from popliteal space	1
Chronic productive inflammation of lymph nodes from cavity near ribs	1
Tissue from thigh—suppurative inflammation.....	1
Chronic productive inflammation with hemorrhage of specimen from urethra	1
Fibrosis with cystic degeneration of testicle.....	1
Marked productive inflammation of specimen from throat	1
Chronic inflammation of growth from inside cheek...	1
Suppurative inflammation of back, near kidney.....	1
Chronic productive inflammation of omentum.....	1
Chronic productive inflammation of tissue from sacral region	1
Productive inflammation of specimen from leg.....	1
Chronic productive inflammation with fibrosis of specimen from testes	1
Chronic suppurative tonsillitis with fibrosis.....	1
Chronic productive inflammation with evidence of tuberculous infection of foot	1
Cystic degeneration of specimen from liver.....	1
Chronic glandular thyroiditis with colloidal degeneration	1
Chondroma of specimen from ear	1
Osteomyelitis of pieces of bone from lower end of tibia	1
Lipoma of specimen from thigh	1
Productive inflammation of calcareous gland from secum	1
Chronic productive inflammation with acute infection of growth from back	1
Acute inflammation with hemorrhage of mesentery tissue	1
Chondroma of tissue from nasal cavity.....	1

**POSTMORTEM TISSUES SENT IN FOR HISTOLOGICAL
EXAMINATION.**

(Non-Medico-legal)

Total number of specimens					46
Lungs	5	Heart	4	Liver	4
Spleens	4	Kidneys	10	Stomach	3
Intestines	1	Mesentery	1	Knee	1
Appendix	1	Lymph nodes ...	1	Brain	1
Blood clots	1	Pancreas	3	Uterus	1
Side of neck.....	1	Ovaries	2		
Abdominal wall.	1	Duodenum	1		

**HISTOLOGICAL EXAMINATION OF POSTMORTEM ORGANS
REMOVED BY PATHOLOGIST**

(Medico-legal)

Total number of specimens				22
Heart	4	Lung	4	
Kidney	5	Liver	3	
Pancreas	1	Brain	1	
Spleen	1	Intestine	1	
Skull	2			

CLINICAL PATHOLOGY.

Total number of specimens 531

	Total.	Posi- tive.	Sus- picious.	Nega- tive.	Unsatis- factory.
Abdominal fluids (for t. b.).....	5	..	..	5	..
" " (for diagnosis) ..	2	..	..	..	..
Anemia (pernicious)	10	3	1	5	1
" (secondary)	19	16	..	2	1
Blood smears for malaria	34	..	..	32	2
Blood smears (miscellaneous)	15	..	..	..	1
Blood smears for lead poison.....	1	..	..	..	1
Blood smears for eosinophilia	2	..	..	2	..
Blood smears for differential count	21	..	..	..	1
Blood smears for leukemia	1	..	..	1	..
Feces for diagnosis	18	..	..	..	..
" tuberculosis	7	..	..	7	..
" typhoid	20	4	..	15	1
" gallstones	1	..	..	1	..
" anchylostoma duodenalis	1	1	..	..	..
" vaccines	1	..	..	..	..
Breast milk	4	..	..	..	..
Milk for bacterial count.....	3	..	..	..	..
"Inspected Milk"	6	..	..	..	3
Pleural fluids:					
For tuberculosis	3	..	..	3	..
" animal inoculation (t. b.)..	7	1	..	6	..
" organisms	2	..	..	..	..
Stomach contents	8	..	..	..	..
Spinal fluids:					
Chemical examinations	19	..	..	..	1
Cytolysis	16	..	..	..	1
Direct cell count.....	8	..	..	..	2
For meningitis	3	..	..	2	1
" tuberculosis	6	1	1	4	..
" organisms	4	..	..	..	..
Urine examinations:					
Urinalyses	245	..	..	..	11
For sugar	3	..	..	..	..
Sedimented for tuberculosis...	17	..	..	16	1
" " organisms	52	..	..	..	..
" " cancer cells ..	1	..	..	1	..
(Hanover) Blood smear for malaria	1	..	..	1	..

ANIMAL PATHOLOGY.

Total number of specimens 60

	Total.	Posi- tive.	Sus- picious.	Nega- tive.
Hemorrhagic septicemia	4	1	..	3
Tuberculosis	7	3	1	3
B. Welchii	1	..	..	..
Glanders	2	..	..	2
Anthrax	3	1	..	2
Blackleg	9	..	..	..
Malignant edema	4	..	..	..
Hookworm (foxes)	3	3	..	..
Parasitic infection (liver tissue).....	1	..	..	..
Hemorrhagic lymph adenitis (spleen and large lymph nodes)	1	..	..	..
Muscle abscess	1	..	..	..
Cultures from calves	13	..	..	..
Liver	1	..	..	..
Pigs for postmortem examination.....	4	..	..	..
Poultry (5 hens and chickens).....	5	..	..	..
Hair for parasitic infection.....	2	..	..	..

BACTERIOLOGICAL DEPARTMENT.

DIPHTHERIA.

Total number of specimens examined.....3055

	Positive.	Suspicious.	Pseudo-.	Negative.	Unsat- isfactory.
	179	41	27	2695	113
(Hanover)	118	..	..	621	....
	<hr/> 297	<hr/> 41	<hr/> 27	<hr/> 3316	<hr/> 113

TYPHOID.

Total number of specimens examined..... 473

	Positive.	Partial ag- glutination.	Negative.	Unsat- isfactory.
	140	25	280	28
(Hanover)	4	..	15	..
	<hr/> 144	<hr/> 25	<hr/> 295	<hr/> 28

TUBERCULOSIS.

Total number of specimens examined3622

	Positive.	Suspicious.	Negative.	Unsatisfactory.
	612	26	2941	43
(Hanover)	44	..	229	..
	<hr/>	<hr/>	<hr/>	<hr/>
	656	26	3170	43

GONORRHOEA.

Total number of specimens examined1708

	Positive.	Suspicious.	Negative.	Unsatisfactory.
	583	236	763	126
(Hanover)	54	..	123	...
	<hr/>	<hr/>	<hr/>	<hr/>
	637	236	886	126

SPECIAL CULTURE WORK DONE IN THE DEPARTMENT OF
BACTERIOLOGY TO DETERMINE ORGANISMS.

Examination of cultures for cause of "pink-eye" 32

Blood cultures 5

Cultures for type of pneumococcus:

Type 4	2
Negative	5
Unsatisfactory	1
	<hr/>
	8

Vincent's Angina:

Positive	10
Suspicious	3
Negative	11
	<hr/>
	24

Vaccines (autogenous) 88

Miscellaneous examinations 111

Pneumonia sputum	2
Pus from eyes	9
“ “ neck	10
“ “ pleural cavity	4
“ “ pelvic abscess	1

Pus from pelvis	1
" " otitis media	1
" " gland abscess	1
" " sinus	5
" " abscesses	5
" " septic hand	3
" " breast	2
" " abdomen	6
" " mastoid	10
" " knee joint	2
" " urine	2
" " ulcer of lip	2
" " rectum	1
" " foot	3
" " abscesses on arm	1
" " chest	4
" " abdominal wound	5
" " carbuncle	1
" " abscess on sole of foot	1
" " wound	1
" " empyema	5
" " uterine curettage	1
" " region of appendix	7
" " socket of jaw bone	1
" " abscess on buttocks	1
" " peritoneal abscess	1
" " axillary abscess	1
" " cervical gland	1
" " ear	2
" " furuncle	1
" " cervix	1
" " kidney	1
" " cyst on leg	1
" " leg	1
" " ovary	1
" " bone abscess	1
" " arm	3
" " infected hands	1
" " prepuce	1
" " sternum abscess	1
" " boil	1
" " vagina	1
" (question of anthrax).....	1

Miscellaneous cultures	13
Saliva for organisms	1
Smears for spirochaetes (negative)	2
Sutures (question if cause of stitch irritation)	
(Suspicious)	1
Hairs from patch of alopecia for tineia (negative).....	1
Cloth for blood (negative)	1
Specimen for cancer cells (negative).....	1
" " pneumococcus (positive)	1
Fluid from enterocholecystostomy	1
Veal (for organisms)	1
Fresh pork (for organisms).....	2

		Pos.	Neg.	Susp.	Total.
Rabies, specimens examined for ..		5	1		6
(Hanover) " " " " ..		1			1

SEROLOGICAL DEPARTMENT.

Total number of specimens on which Wassermann test was made6298

Positive.	Questionable(?)	Anti-complementary.	Negative.	Un-satisfactory.
1257	126	52	4844	19

Number of specimens unsatisfactory for the test..... 247

	Total.	Posi-tive.	Anticom-plementary.	Nega-tive.	Ques-tionable.
Spinal fluids	45	7	1	35	2
Pleural fluids	1	..	..	1	..
Complement fixation for gonorrhoea	27	6	1	19	1

REPORT OF THE BUREAU OF VENEREAL DISEASES

Charles A. Weaver, M. D.
United States Public Health Service

Report of the Bureau of Venereal Diseases

FOR THE FISCAL YEARS ENDING JUNE 30, 1922.

DR. CHARLES DUNCAN,
Secretary, State Board of Health,
Concord, N. H.

SIR: In making a report of the bureau of venereal diseases, I submit only a brief survey of activities and existing conditions. The work of control has been conducted along the same lines as in the preceding two years, which plan was mapped out by the federal government in 1918. It conforms to the laws of New Hampshire and I do not see how this general plan for the work can be improved upon. The New Hampshire legislature appropriated \$6,000 for each of the two years, 1921 and 1922.

The federal government failed to make any appropriations for the year ending June 30, 1921, so for that year the bureau had only the state money to work with. The government, however, co-operated with the State Board of Health in every way in the work. The government made an appropriation of two hundred twenty-five thousand dollars (\$225,000) for the year beginning July 1, 1922.

The allotment for New Hampshire from this amount was nine hundred forty-three dollars and eight cents (\$943.08). Six thousand nine hundred forty-three dollars and eight cents for this most important health work for the year ending June 30, 1923.

CO-OPERATION.

Individual effort amounts to but little in public health work without co-operation. The co-operation received from the government is of great value in this health work and it is ever ready to do anything it can to assist in the control of venereal diseases.

The general public co-operates in the work, also the courts, the Police departments, Mayors of cities, Red Cross, Woman's

Clubs, Farm Bureaus, in fact all civic societies. The city of Manchester furnishes rooms, heat and light for a clinic, also a full-time nurse for the work. The city of Dover furnishes rooms and the Red Cross a part time and social worker. The city of Nashua furnishes rooms and a nurse. The city of Concord furnishes rooms and the local Red Cross makes it possible to have a clinic in Concord by contribution and a nurse.

The thing most needed in the control of venereal diseases is the full co-operation of the medical profession, which I am sorry to say we do not get. It is hoped that they may be made to see their responsibility in this most important public health work.

EDUCATION.

The methods used in education are the distribution of literature, lectures, film showings, slide showings, and card exhibits. The State Board of Health through the Bureau of Venereal Disease Control will send pamphlets containing valuable information on venereal diseases to any one making a request.

Write for the following pamphlets according to your need:

- Set A. For Young Men.
- Set B. For General Public.
- Set C. For Boys.
- Set D. For Parents of Children.
- Set E. For Girls and Young Women.
- Set F. For Educators.

New Hampshire State Board of Health,
Bureau of Venereal Disease Control,
Concord, N. H.

The State Board of Health through the Bureau of Venereal Disease Control offers its services as it has in the past to civic and fraternal organizations, social and religious clubs. Lecturers, both medical and laymen, can be sent to present the subject of venereal disease control.

The Bureau of Venereal Disease Control will co-operate in every way with all agencies that desire to do their share in assisting the local health departments to combat this, the greatest menace to public health.

REPRESSION OF PROSTITUTION.

Prostitution is the greatest source of infection of venereal disease. Eighty-five per cent of all cases can be traced back to a prostitute. There are sixteen cases of gonorrhoea in the male to one in the female. The ratio in syphilis is about five in the male to three in the female. The efforts of the bureau, therefore, have been directed to the source of infection, as it is of great importance. Whenever we find those who commercialize vice, we have a reasonable right to suspect venereal disease. We cause them to be examined and if positive (and they usually are), we see to it that they have proper treatment until non-infectious. If they cannot be trusted, they are committed to some institution and detained there and treated until non-infectious, and will no longer be a public menace. There have been times during the past two years when twenty to thirty cases have been so detained. In doing this, we feel that the Bureau has done much to control and protect the public against the most dreaded of infectious and contagious diseases. The following is a blank form used for commitment which was recommended by the court:

THE STATE OF NEW HAMPSHIRE.

The State Board of Health, having reasonable cause to suspect thatnow residing (or being) in the town of in the County ofand State of New Hampshire, is afflicted with a venereal disease known as , a disease dangerous to public health; it is hereby ordered that the said..... be placed in quarantine at the where said is to be treated for said disease, which treatment is placed in charge of Dr., a licensed physician, and duly accredited agent of said Board. Said Dr. is directed to take said..... forthwith and deliver to the keeper of said institution together with a copy of this warrant; and said keeper

is hereby required to receive said
and maintain in quarantine
 under the regulations prescribed by said Dr.
, and to detain said
 until said Board finds and certifies that is no
 longer a source of infection. Said Dr.
 is to make return hereon to said Board of his doings here-
 under.

This order is made under the provisions of Chapter 163 of
 the Laws of 1919.

Witness the State Board of Health by the hand of its Secre-
 tary, and its seal, thisday of
, 192 .

.....
Secretary.

LAW ENFORCEMENT.

Only a few cases have been brought into court in the past
 two years. Those who are obstinate and disregard quarantine
 and those who willingly expose others to disease should be
 punished, and few have been. The public as a rule understands
 that the public health laws must be regarded.

TREATMENT.

The laws of New Hampshire require proper treatment for
 those infected with venereal disease, and for those who are
 not able to pay the State Board of Health has established clin-
 ics in the following places: Concord, Dover, Manchester and
 Nashua. The clinic is an educator. It gives treatment to those
 who would have no treatment but for it, and by the follow-up
 work with known infectious cases many are found who are
 unknowingly infected with venereal disease, and especially with
 syphilis. To illustrate we report the following cases which is
 only one of many which has come to the clinic:

In the summer of 1922, in a small New Hampshire city where
 the textile strike was on, the clinic nurse found in a family
 among the strikers, two little girls, aged seven and nine years,
 who were going blind. These children were sent to the clinic
 and their bloods proved positive for syphilis. They were given
 treatment immediately and their partly lost eyesight was re-
 stored. This led back to the father and mother. Bloods of
 the parents were also taken and proved positive for syphilis,

although they denied any knowledge of ever having had the disease. Treatment was given and all are now negative. These cases will be kept under observation for at least two years. Cases of this kind are of great benefit to the individual. The clinic not only helps the individual, but from an economical standpoint is of great value to the state. The clinic through its treatment arrests a disease which is the cause of paresis and tabes or locomotor ataxia. It also prevents blindness, epilepsy and other nervous conditions which cause insanity. Without this kind of treatment some of these unfortunates would become inmates of our public charitable institutions.

Besides individual benefit and protection to the public against these diseases, we believe that through the work of this Bureau more than twice the amount of the appropriation is saved to the state of New Hampshire.

STATISTICAL REPORT.

(Year ending June 30, 1921.)

Total number of cases receiving treatment at clinics.

Syphilis:

Males	959
Females	861

Gonorrhoea:

Males	744
Females	424

Chancroid:

Males	2
Females	1

Undetermined:

Males	77
Females	82

Total number of visits to clinics:

Males	4987
Females	4673

Total number of treatments received at clinics.....9701

Total number of doses of arsphenamine administered.....1960

Total number of Wassermann tests 858

Total number of microscopic examinations 424

Total number of cases reported to State Board of Health
by physicians, year ending June 30, 1921..... 794

STATE BOARD OF HEALTH.

(Year ending June 30, 1922.)

Total number of cases receiving treatment at clinics.

Syphilis:

Males 1524

Females 1339

Gonorrhoea:

Males 996

Females 559

Chancroid:

Males 0

Females 0

Undetermined:

Males 132

Females 61

Total number of visits to clinics.

Males 5392

Females 4898

Total number of treatments received at clinics 10,290

Total number of doses of arsphenamine administered... 1790

Total number of Wassermann tests 720

Total number of microscopic examinations..... 412

Total number of cases reported to State Board of Health
by physicians, year ending June 30, 1922..... 698

Respectfully submitted,

CHARLES A. WEAVER,
In charge Venereal Disease Control,
N. H. State Board of Health.

**REPORT OF DIVISION OF
PUBLIC HEALTH NURSING
and
Bureau of Maternity, Infancy and Child Hygiene**

**Elena M. Crough, R. N.
Supervisory Nurse.**

Division of Public Health Nursing

Following the war the development of public health nursing in New Hampshire was very rapid, and the need of a general public health program and a closer coördination of all public health nursing activities throughout the state was clearly shown.

During the past year an earnest endeavor has been made to bring this about; as well as to place within reach of each worker a definite and tangible service that would be of value to them and to their community.

A list of public health nurses is kept up to date and pamphlets and literature on public health matters is supplied free of charge to the workers, as well as bulletins on contagious and infectious diseases, prenatal, infant and child care, diet lists, etc., for distribution.

An exhibit department has been arranged consisting of sets of posters covering a wide range of public health subjects; slides and lantern; motion picture films with machine. Tiny Tim's House, Chase Doll with outfit, for teaching classes in infant hygiene and a stereomograph which has been successfully used at county fairs. These are loaned free of charge within the state to public health workers, women's clubs, churches and organizations interested in public health education. This department has been successful from the very beginning, as is shown by a constant demand for the material.

A library made up of the best and latest books on Public Health Nursing, Contagious and Infectious Diseases, Children's Diseases, Social Service, Social Diseases, Prenatal, Infant and Child Care, Psychology, Mental Diseases, Nutrition, Child Training and Health Surveys has been purchased and made available to the public health nurses of the state, through the courtesy of the New Hampshire Tuberculosis Association.

At the annual conference of State Health Officers, held at Concord, March 23-24, 1922, the public health nurses had an important place on the program; papers were read followed by interesting and instructive discussions.

During the past year this division has had many requests from Women's organizations to furnish programs for health day, and to give talks on a variety of health topics.

One of the important duties of this division is the supervision of the New Hampshire Tuberculosis Association nursing service. This includes the inspection of weekly and monthly reports of nurses; visits to clinics; assisting nurses in conducting clinics, in organizing their work, as well as a preliminary field work necessary in opening new clinics, conferences with health officers, physicians, nurses, women's clubs, fraternal organizations, clergymen, newspaper editors and with interested individuals.

The Tuberculosis Association at the present time employs ten nurses. There are thirty-one clinic centers in the state. During the past year a monthly average of twenty-two clinics have been held. The nurses carry on an intensive case-finding, clinic and follow-up service, as well as nutrition and posture classes. There are approximately four thousand tuberculosis cases under supervision and treatment in the state.

The Bureau of Maternity, Infancy and Child Hygiene has been developed with the aid of two field nurses in an endeavor to lessen the number of unnecessary deaths of mothers and babies that occur yearly. In the last analysis public health work is education, and it is our duty to inform our public regarding the causes of maternal and infant mortality, as well as to demonstrate the most effective methods in conserving life.

Thousands of pieces of literature on prenatal, infant and child care have been mailed or distributed to mothers. Lectures have been given and exhibits have been shown. We have been able in many ways to assist and coöperate with local agencies interested in maternal and infant welfare work.

Health centers are being established where prenatal, infant and pre-school groups may meet and information be given to the expectant mothers regarding proper care of self and children under six years of age.

The work is recently begun, but enough progress has been made to show beyond a doubt the need of this public health service, particularly in our rural sections.

No treatment is given at the Health Centers, instructive talks are given by physicians; the children are examined thoroughly and each child needing attention is referred to his family physician. The nurse who is working in that territory assists the

parent, whenever necessary, in arranging for the correction of existing defects.

If this work should be thoroughly done in all parts of the state, in a comparatively few years our schools would reap the benefit by receiving classes of physically fit children.

In many confinement cases it is very difficult to find a woman who is willing and possesses the knowledge needed to care for mother and baby during the lying-in period. We are endeavoring to overcome this by gathering together groups of interested women and giving them simple instruction in care of the sick, diet, etc. These women will then be ready to answer an emergency call and will simplify this serious problem greatly.

A very successful institute for public health and private duty nurses was held in February. Fifty-three nurses took the course. Instruction on the best methods of prenatal instruction and infant hygiene was given by Miss Marie Phelan, R. N., of the Children's Bureau.

The organization of the various activities cannot be done in a day. It is best to go carefully in order to establish a firm foundation for future thorough and effective work. This must take time and definite results will be shown only after long*continued effort.

CHILD HYGIENE.

New Hampshire is coöperating with the Federal Government in the important projects of establishing a state-wide and nation-wide maternity and infancy program that will eventually reduce to a minimum the unnecessary number of deaths each year of our mothers and babies.

The United States stands in a most humiliating place among the leading countries of the world regarding its maternal and infant mortality. It is estimated that in the registration area alone, 17,000 mothers lose their lives yearly from childbirth or as result of complications of pregnancy. Instead of decreasing, the number of births has increased until for every 1000 living births our maternal death rate is 7.4.

Our baby death rate is also frightfully high; various figures are given but it is estimated that last year 300,000 babies died before they reached the age of one year, and 150,000 of these died before they were six weeks old from causes that existed before they were born and which might have been removed if

the mother had had proper care and supervision before the child was born.

The measures that have proven most successful in preventing unnecessary loss of life among mothers and babies are, prompt and accurate birth registration, health centers, public health nurses, mother and infant clinics, adequate hospital service, trained attendance at time of confinement, a physician with a thorough knowledge of obstetrics and education of the mother in maternity and child hygiene as well as education of the general public in the necessity of maternal and infant health.

In New Hampshire during the past year 10,125 babies were born and 881 died before they reached the age of one year. The number of stillbirths is not included in these figures of which there were 390.

For every 2000 babies born last year 13 mothers laid down their lives.

The following table shows the infant mortality in New Hampshire by counties:

Counties.	No. living. births.	No. deaths. under 1 year.	Infant mor- tality per 1,000 liv- ing births.
Rockingham	1,070	90	84.11
Strafford	817	75	91.79
Belknap	485	38	78.35
Carroll	231	15	64.93
Merrimack	992	99	99.79
Hillsboro	3,840	344	98.85
Cheshire	622	41	65.91
Sullivan	511	34	66.53
Grafton	831	53	62.27
Coos	1,006	92	86.30
	<hr/> 10,125	<hr/> 881	<hr/> 87.01

In order to change these figures the State Board of Health created the Bureau of Maternity, Infancy and Child Hygiene, which has been in operation but a short time, and already much has been done to establish a state-wide, worth-while program and build a firm foundation for future effective work.

Because of the small sum of money available and in order to reach all sections of the state, it was decided to divide the work into three divisions:

1. Visual Education.
2. Intensive Demonstration.
3. Special Projects.

VISUAL EDUCATION.

There has long been in evidence a general belief that with motherhood comes a complete knowledge and understanding of the care of a baby and that no special study or preparation is necessary for this most important event, unfortunately this is untrue as has been demonstrated to the sorrow of countless mothers. As a rule the first baby is the sufferer because of this lack of education in our young women. The necessary knowledge can be gained only through observation and instruction and is needed as badly by the well-to-do mother as by the poorer one.

As soon as a baby is registered at the Bureau of Vital Statistics, the mother receives a personal letter of congratulations and a little book telling in a simple way the things she should know and do for her baby. This is followed by literature on baby and child care, diet lists, etc., until the child is a year old. That this service is appreciated by the women of our state is proven by the number of letters received by the department and by the request for more literature.

Public Health Workers in the state have demonstrated their interest in the work by sending in the names of prospective mothers in order that letters and literature may be forwarded to them. Many prospective mothers learning that books and pamphlets on prenatal care have been made available to them, are writing in for information and asking to be placed on the mailing list.

A complete exhibit consisting of colored posters on Prenatal and Baby Care, a Chase doll with layette, lantern slides, stereopticon lantern, illustrated lectures, moving pictures and moving picture machines. Literature and programs for Baby Day, Mother's Day or Health Week has been provided to Public Health Workers, Women's Clubs, Churches and Granges. The material in this department is loaned for a period of two weeks free of charge and already has been made use of extensively.

Talks on Prenatal Care and Child Hygiene have been given to Women's Clubs, Churches and Societies, a great deal of interest has been displayed and a keen desire is apparent to become more familiar with the subjects.

INTENSIVE DEMONSTRATION.

Sullivan County.

Because of the limited amount of money available for Maternity and Infancy work it was decided that one intensive demonstration would be the best way to prove the value and necessity of such work.

Sullivan County was selected as an excellent field for this particular piece of work. It is of a rural character, small and comparatively easy to work in. There are fifteen towns, the entire population being about 21,000.

The hospital facilities are very limited, there being only two hospitals for the entire township. These are located in the towns of Claremont and Newport.

In many of the towns there is no resident physician, there are few public health nurses and the work is badly needed.

A nurse was placed in that county the middle of July with headquarters in Claremont, the largest town.

Beginning with the June births each home in the county is visited by the nurse, in this way she becomes acquainted with the mother, gains her good will and confidence, offers and gives whatever advice or aid is needed in each particular case, uses her car when necessary to carry mothers, babies and children to physicians or hospitals.

We expect in time to get in touch with the majority of prospective mothers and will be able to give the needed prenatal advice and care. This is necessarily of a slow development and is more difficult than in the cities, but the fact that prospective mothers are coming to the nurse of their own accord is encouraging.

We are also making a visit to homes where the death of a baby under one year of age has been reported, going back for three years in order to gather statistics regarding prenatal, obstetrical and post-natal care and to check up on feeding, etc. At this time, information is obtained for statistical purposes covering the above points.

Health centers are being opened in the towns as rapidly as possible. A committee of representative townspeople is selected and many of the details regarding selection of room furnishings, etc., are left with them.

The opening date is thoroughly advertised, the work is given as much publicity as possible and mothers are urged to come and bring their babies and children under six years of age.

Exhibits are arranged consisting of posters on prenatal care, infant and child feeding and food selection. Safe and unsafe toys for children are also shown as well as babies' layettes and the simple, necessary things needed at the time of confinement.

Interesting talks are given on some health topic especially stressing the need of prenatal care. While the babies and children are being examined, slides are shown and sometimes an illustrated lecture is given by a physician, nurse or dietitian.

A physician, as a rule a children's specialist, gives a thorough examination to the children, talks to the mothers and makes the necessary recommendations. At two of the clinics a specialist on tuberculosis has been present to make a thorough examination of the lungs.

A record of each examination with recommendations made by physicians is kept and a duplicate is presented to the mother.

Three of these centers were opened during the fall, one at Cornish Flat, one at Charlestown and one at Acworth. The people are greatly interested and other towns have requested the work. The attendance was excellent at one opening, thirty-two babies and children were examined.

The nurse, shortly after the clinic visits the home of each mother, talks over with her the result of the examination, recommendation of physician, etc., endeavors to see that existing defects are corrected and continues to make frequent return calls.

At the present time there are sixty-four babies under supervision and twenty-two children of pre-school age.

A mother's class has also been initiated at one of the health centers.

We have been forced because of cold weather to postpone the opening of further centers until spring, but we have already demonstrated the need of the work and the interest of the people has been clearly shown by their attendance at the clinics as well as by requests for additional health centers.

SPECIAL PROJECTS.

City of Berlin.

Berlin is an industrial city located in the northern part of the state with a population of 16,000. Many of the people are foreign born with French Canadians predominating.

The infant mortality is higher here than in any other place in New Hampshire, the percentage of deaths under one year of age to total number of living births reported being 11.61.

It was decided to make a survey in this city to determine if possible the reason for this high death rate.

We planned to go back over a period of five years, visit each home from which a premature, stillbirth or the death of a baby under one year of age has been reported, and by questions and observation gather some accurate information as to the reasons for these deaths and at the same time check upon prenatal, obstetrical and postnatal care of the mother.

We found, owing to a series of strikes that had extended over many months, that we would be unable to do this as a great many families had moved back to Canada or to adjoining cities or towns. From a carefully prepared list of over four hundred names, we were able to locate and interview less than half of this number of families, but enough was accomplished to show that almost no prenatal advice or care was being given, that although few of the mothers worked in the mills, a great many weaned their babies very early and that many did not nurse them at all, and that if we hoped to lower the number of infant deaths, intensive educational work would be necessary.

The best way to get the desired results would be through a Public Health nurse working under supervision of the Board of Health, in this way she would have more authority and access to the home of every new born baby in the city.

The Mayor and City Council were interviewed, the entire plan was carefully reviewed and the services of a nurse was volunteered for a period of six months by the Bureau of Maternity and Infancy of the State Board of Health coöperating with the Children's Bureau to organize a Maternity and Infancy Program providing at the end of this time the city would take the work over and assume all responsibility for same.

This, the Mayor and Council unanimously voted to do and the work was started October 1. The most gratifying thing is that the city has awakened to its own responsibility in this matter and is preparing to make an earnest endeavor to bring about a change in the infant death rate.

We intend to follow this plan in other cities and by this method hope to see the Maternity and Infancy work under way in every city in the state.

EXHIBIT DEPARTMENT.

STATE BOARD OF HEALTH.

CONCORD, N. H.

Material available to Public Health Nurses, Social Workers, Women's Clubs, Schools, Churches and Societies free of charge, except for transportation.

Material must be ordered ten days in advance of date required.

Material may be kept a week (unless other arrangements are made) and must be returned in good condition.

Books may be kept two weeks and must be promptly returned in good condition.

Address,

ELENA M. CROUGH, R. N.,
Supervising Nurse, State Board of Health.

I. Colored Posters, wall exhibits.

Complete Sets on:

1. Prenatal and Postnatal Care.
2. Healthy Babies.
3. Healthy Children.
4. Hygiene of School Children.
5. Preventive Orthopedic Defects.
6. Food and Health.
7. Posters showing proper diet for each meal for pre-school children and school children.
Posters showing wrong diet for children of pre-school age and school children.
8. Food and Health.
9. Milk Gives Energy.
10. Milk.
11. Prevention of Tuberculosis in Childhood.
12. The American Girl.

Chase Doll and complete layette.

Articles necessary in giving the baby a bath.

Bottles, etc., necessary in teaching preparation of milk formulas.

(Valuable in teaching Infant Hygiene to young Mothers' Classes.

Toys:

Showing safe and unsafe toys for babies and small children.

II. Lantern Slides and Lantern.

1. Better Babies (Shows why some babies are born sickly and delicate).
2. A Day in The Life of a Baby.
3. Baby Hygiene.
4. Oral Hygiene.
5. The Undernourished Child.
6. Milk (clean milk and unclean milk, reasons for same).
7. Tuberculosis (cure and prevention, home and Sanatorium treatment.)
8. Safety First (illustrating the way 98% of accidents occur).

III. Moving Pictures and Moving Picture Machine.
(Stereomograph and Slides)

1. The Fly.
2. Vaccination.
3. Jenks (Tuberculosis, one reel cartoon).
4. Keeping Fit (Social Disease).
5. Oral Hygiene.
6. The Modern Health Crusade.

LOAN LIBRARY.

List of books available to Public Health Nurses :

- | | |
|---|-------------------|
| 1. Physiology and Hygiene. | <i>Conn</i> |
| 2. Personal Hygiene and Home Training. | <i>Lippitt</i> |
| 3. The Prospective Mother. | <i>Slemons</i> |
| 4. Getting Ready To Be a Mother. | <i>VanBlarcom</i> |
| 5. Obstetrical Nursing. | <i>VanBlarcom</i> |
| 6. Healthful Schools. | |
| 7. Sex and Common Sense. | <i>Roydon</i> |
| 8. Character Training in Childhood. | |
| 9. Rural Child Welfare. | <i>Howland</i> |
| 10. Short Talks With Young Mothers. | <i>Putnam</i> |
| 11. Pulmonary Tuberculosis. | <i>Otis</i> |
| 12. Consumption. | <i>Flick</i> |
| 13. Consumption. | <i>Hawes</i> |
| 14. Fresh Air and How To Use It. | <i>Farrington</i> |
| 15. Tuberculosis. | <i>Galdreath</i> |
| 16. Pulmonary Tuberculosis. | <i>Riverie</i> |
| 17. Rules for Recovery from Tuberculosis. | <i>Brown</i> |
| 18. The Battle with Tuberculosis. | <i>King</i> |
| 19. The Open Air Treatment. | <i>Walters</i> |

20. Saint's Rest (A story of chasing the cure). *Seagrave*
21. Facts about Tuberculosis. *Lillian Brandt*
22. Diagnostic Standards. *N. T. B. Asst'n*
23. A Half Century of Public Health. *Ravenel*
24. A Manual of Diseases of Children. *Ruhrak*
25. The Ungeared Mind. *Chase*
26. Social Psychology. *McDougal*
27. How To Help. *Coynton*
(Social Service)
28. The Bitter Cry of The Children. *Spargo*
29. Twenty Years of Hull House. *Adams*
30. Epidemics: How to Meet Them.
31. Nutrition and Growth in Children. *Emerson*
32. Defective Children. *Kelynack*
33. Social Diagnosis. *Richmond*
34. A New Conscience and An Ancient Evil. *Adams*
35. Practical Dietetics. *Pattee*
36. Chemistry for Nurses. *Otterberg*
37. Organization for Public Health Nurses. *Braman*
38. Public Health Nursing. *Gardner*
39. The Community Health Problem. *Burnham*
40. A Hand Book for School Nurses. *Kelley & Bradshaw*
41. The School Nurse.
42. The Public Health Nurse. *Hill*
43. The Tuberculosis Nurse. *Ellen LaMote*
44. Home Nursing. *Isabel Macdonald*
45. District Nursing. *Mary Gardner*
46. Rural Nursing. *Mary Gardner*
47. Child Welfare for Public Health
Nurses. *Mary Gardner*
48. Mental Hygiene For Public Health
Nurses. *Mary Gardner*
49. Industrial Nursing. *Wright*
50. Immigrant Health and The Community. *Dorrs*
51. The Psychology of Nursing. *Higgins*
52. Reading in Rural Sociology. *Phelan*

MONTHLY PUBLICATIONS.

53. American Journal of Public Health.
54. The Survey.
55. The Nation's Health.
56. The Public Health Nurse.
57. Journal of Out-Door Life.

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(Thirteenth Biennial)
New Hampshire State Board of Health**

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BULLETIN

OF THE

NEW HAMPSHIRE STATE BOARD OF HEALTH

VOL. 6

CONCORD, JUNE, 1922

NO. 5

FOOD AND DRUG INSPECTION NUMBER

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BERTHA M. STOHRER, Clerk.

DIVISION OF VENEREAL DISEASE CONTROL

CHARLES A. WEAVER, M. D., in Charge.

ELENA M. CROUGH, R. N., Nurse.

HARRIET I. PARKHURST, Chief Clerk, State Board of Health.
BERTHA M. WATSON, Chief Clerk, Dept. Vital Statistics.

REPORT OF FOOD AND DRUG INSPECTION

By CHARLES D. HOWARD, Chemist

MILK

Improvement in the quality of our milk supply is slowly yet very definitely continuing. That this is true is apparent if we compare the general conditions of today throughout the state with those as existent but a few years ago. Yet admittedly there is still much to be desired in connection with some of our city supplies, while in the case of our smaller towns the accomplishment has been relatively small. Even here, however, we know that conditions as a whole are vastly better than they once were.

Under the New Hampshire law, milk inspection is in charge of cities and towns, this work devolving upon the health officer where there is no specially appointed inspector. The time-honored custom of delegating to some busy practicing physician control of all local public health matters is a logical and natural one and it is in fact very desirable, if not practically necessary, as concerning those features of public health work which call for the exercise of medical guidance and discretion. But the work of a modern health department demands the execution of a great deal of detail, some of it more or less disagreeable in character, and it is out of the question to expect any practicing physician really worth having in such a position to find the time, even though he have the willingness and disposition, to adequately attend to these details.

Satisfactory milk inspection not only involves a periodic investigation, through analysis, of the quality of the product as dispensed by the dealer, but it particularly calls for fairly frequent visits to the dairy itself for the purpose of checking up on the numerous sanitary details involved.

Each town can expect to enjoy in the way of a pure and clean milk supply just as much as it is willing to put into this matter and no more. The state will furnish an inspector for instructional and advisory purposes and this department will make examinations to the limit of its facilities for such towns as are unable to arrange to carry out their own testing.

Recently the town of Claremont took a very important step in this connection when it voted to exclude from sale all milk not the product of tuberculin-tested animals. This was very shortly followed by similar action on the part of the city of Keene. The latter has also recently secured the full time services of a technical graduate in public health administration and this city is now in position to give, and is giving, the subject of milk inspection the attention that it deserves.

A similar arrangement has been in effect in Berlin for some years. Claremont now has the active services of a veterinarian. For many years Manchester has had an efficient system of milk inspection and Concord and Nashua are accomplishing much in this direction. The cities of Portsmouth, Dover, Rochester and Somersworth are also displaying an

interest and are giving this matter as much attention as their facilities permit, Dover's citizens recently having taken action preliminary to the establishment of a central milk-distributing plant. Notwithstanding that Somersworth has been handicapped through rather frequent changes in the office of health officer and one or two rather unfortunate appointments, yet as will appear from the table following, its milk supply continues to show a comparatively excellent rating.

During the past year the city of Concord has established a central milk-distributing plant in charge of a trained manager. A large share of the output is pasteurized; the methods of handling are excellent and the future of this project seems assured.

It is to be regretted that in the cases of two of our cities the subject is not receiving adequate attention, in one of these apparently nothing having been done for some time, so far as can be discovered. In fact it has even proven impossible to secure collection of samples in cooperation with this department.

At the present time there are but four licensees for the production of the grade known as Inspected Milk, and it is not improbable this grade will ultimately be abandoned altogether, the reason being that in order to insure such a supply being truly what it purports to be requires an amount of time and attention on the part of this department wholly disproportionate to the value of the results accomplished, considering the very small ratio which this milk bears to the whole amount consumed. While special efforts on the part of the Board in the direction of supervision of the production of certified or inspected milk would undoubtedly be appreciated, and are in fact being demanded, by a limited number of the producers who expect to reap a financial advantage therefrom, yet it is believed that the diversion of our means to such an end would be unwise. It would seem better policy to devote the effort thus necessitated toward the campaign to secure a better and purer milk supply for the average consumer. The latter is entitled to clean milk produced under sanitary conditions from disease-free animals no less than are those favored individuals who are financially able to pay a fancy price.

Without doubt enforcement of a regulation adopted under the Sanitary Food Law prohibiting the sale by stores of milk in other than original packages would be helpful in correcting certain unsanitary practices not infrequently noted by inspectors and hitherto described in this publication.

The following table presents a summary of the results of milk examination since the last report. Of the 680 samples examined 411 were rated as not of satisfactory quality for various reasons, 318 of these samples being thus classed either wholly or in part because of the presence of varying amounts of visible dirt or sediment. 54 were classed as representing milk distinctly dirty and unfit for sale; 84 failed to comply with the minimum statutory standard of 11.85 per cent. of total solids and 3.35 per cent. of fat; 24 gave evidence of the presence

of added water, while 21 were found to be skimmed. Obviously the circumstance responsible for failure to secure an entirely favorable rating in the case of a large share of the samples was a slightly dirty condition. This is not however to be accepted as signifying that conditions in this respect are any poorer here than elsewhere.

SUMMARY OF RESULTS OF MILK EXAMINATION ARRANGED BY TOWNS

Town	Total Samples	Satisfactory	Not Satisfactory	Dirty	Watered	Skimmed
Bristol	6	1	5	1	0	0
Claremont	12	5	7	1	0	1
Colebrook	4	2	2	0	0	0
Concord	189	100	89	7	2	4
Conway	6	2	4	1	0	0
Derry	6	3	3	0	0	0
Dover	35	10	25	3	3	1
Goffstown	6	3	3	0	0	0
Keene	108	29	77	14	9	3
Laconia	15	8	7	1	0	0
Lancaster	10	2	8	1	0	0
Lebanon	48	10	38	6	0	1
Lincoln	2	0	2	1	1	0
Littleton	28	12	16	4	1	0
Manchester	6	0	6	0	3	2
Milford	12	1	11	0	1	0
Nashua	1	0	1	0	0	1
Newport	13	3	10	0	0	1
Orford	2	0	2	0	2	0
Plymouth	12	6	6	2	0	1
Portsmouth	49	18	31	4	2	4
Rochester	13	6	7	1	0	1
Somersworth	39	23	16	2	0	0
Unclassified	60	25	35	5	0	0
Total	680	269	411	54	24	21

ICE CREAM

Of the forty-six samples examined sixteen failed to comply with the statutory standard of fourteen per cent. of butter fat. Most of these substandard samples represented the products of out of state manufacturers, seven being of one maker alone. The latter's defense, viz. that our analyses were incorrect, was untenable as a large number of tests were run by two different analysts and by two distinct methods, including the gravimetric one. The local agents of this company were accordingly notified that any further sales of this product, if found below standard, would lead to their prosecution. Later in the season examinations of some shipments disclosing that their ice cream was in compliance with the New Hampshire standard, the company's name was provisionally restored to its former good standing.

Sanitary inspections as made at drug stores and other places where ice cream is dispensed are indicative of distinct faulty sanitary conditions in many instances. Failure to keep the cabinet in cleanly condition is partly responsible but the chief criticism is in the frequent lack of facilities for the effective washing of such accessories as glasses,

plates and spoons, and in the use of cold or dirty water for this purpose. It is believed that the situation is such as to warrant the adoption of a special regulation in this connection under the Sanitary Food Law, in line with similar ones as recently placed in force in other states and cities.

Regulation 12 under the Sanitary Food Law (not hitherto published) and prohibiting mistreatment of shipping containers for ice cream and similar articles, reads as follows:

"To facilitate proper cleaning and as a means of protection against impairment of the quality of foods subsequently packed therein, every bottle, jar or can, used as a container for milk, cream, ice cream, oysters or similar perishable articles, shall, immediately following emptying, be well rinsed with cold water. Such empty containers shall be held under cleanly conditions and shall be promptly returned to the owners, by whom they shall be thoroughly cleansed and sterilized prior to each refilling.

"The use of galvanized containers for oysters and similar moist food stuffs is prohibited."

ICE CREAM, BELOW STANDARD

No.	Manufacturer and Origin	Fat	Remarks
11535	F. A. Clark, Warner.	7.95	Much below standard. Sold as "strawberry," Highly art. colored, with but little fruit.
11231	Palace of Sweets, Ice Cream Co., Manchester.	12.85	
11360	John Spence, Nashua.	13.00	Lemon Cherry
11341	Tait Bros., Springfield, Mass., collected at Claremont.	10.86	
11340	J. G. Turnbull Co., Greenfield, Mass.	12.02	Strawberry
11339	Manchester Ice Cream Co., Manchester, Vt. Collected at Claremont	12.12	
11163	Submitted from Laconia by mfg.	11.68	Chocolate
11209	Kreamy Ice Cream Co., Lyndonville, Vt. Collected at Penacook.	10.69	
11210	Kreamy Ice Cream Co., Lyndonville, Vt. Collected at Penacook.	10.56	Orange
11039	Mansion House Ice Cream Co., Cam- bridge, Mass. Collected at Concord.	13.46	
11040	Mansion House Ice Cream Co., Cam- bridge, Mass. Collected at Concord.	13.46	Vanilla
11041	Mansion House Ice Cream Co., Cam- bridge, Mass. Collected at Concord.	12.64	
11064	Mansion House Ice Cream Co., Cam- bridge, Mass. Collected at Dover.	11.13	Strawberry
11071	Mansion House Ice Cream Co., Cam- bridge, Mass.; Collected at Dover.	13.17	
11073	Mansion House Ice Cream Co., Cam- bridge, Mass. Collected at Dover.	10.83	Pineapple
			Frozen Pudding

BUTTER

Nine of the following described samples were of illegal character, short weight being the chief criticism. In every such instance the moisture content was such as to indicate that if these butters were full weight when printed water must have been present in excess of the legal limit of sixteen per cent.

No.	Brand and Origin	Result
11075	Tub butter. Submitted from Rochester.	Genuine butter but highly rancid.
11086a	Print butter. Trout Brook Creamery Co., Concord, Vt. Submitted from Tilton.	Net wt. 15.9 ozs. Moisture 14.61 per cent. Fat 79.05. High salt, low fat, slightly short wt.
11086b	(As above)	Net wt. 15.5 ozs. Moisture 14.38 per cent. Fat 79.16 per cent. High salt, low fat, content, short wt.
11086c	(As above)	Net wt. 15.8 ozs. Moisture 14.65 per cent. Fat 79.39 per cent. High salt, low fat content, slightly short wt.
11091	Choice dairy butter. Submitted from Charles-town. Half-pound print.	Net wt. 7.25 ozs. Moisture 15.64 per cent. Short wt.
	Brookfield Creamery Butter. Swift & Co. M. A. Proulx, Franklin	Net wt. 15.5 ozs. Gross wt. of thirteen prints (including wrappers) as weighed at store 12 lbs. 13 ozs. Short weight.
11006	Tub butter. Submitted from Nashua. Said to be served in boarding house as butter.	Not butter. Is vegetable oleomargarine. Use as specified violates statute.
11949	In wrapper marked "Oleomargarine." Offered as selling sample of oleomargarine.	Actually represented butter, whereas shipment as subsequently made was oleomargarine.
12132	Dairy print butter. O. F. Atwood, Cornish.	Net wt. 15.25 ozs. Parchment still very moist. Seventeen prints weighed at store all under 16 ozs. gross wt.
12231	Dairy print butter. Submitted from Claremont. Question of genuineness.	Butter.

BEVERAGES

The usual number of soft drinks were examined for saccharin and antiseptics and in some instances for alcoholic content. None contained saccharin but two ciders were found in which sodium benzoate had been used without the declaration as required by law. In one of these instances the vendor paid a fine while in the other, involving a carload as consigned to Wilfred Langlois, Newmarket, and found to be not representative of genuine cider as claimed, the case was referred to the federal department.

A number of samples of liquor, examined for wood alcohol at the request of physicians, were found to contain none of this substance, nor were other foreign substances present.

BEVERAGE EXAMINATIONS

No.	Data Concerning Article	Result
10874 10849	Sweet Cider Submitted from Claremont Sweet Cider, John B. Currier, Manchester	Alcohol 1.35 percent Alcohol 0.10 percent; benzoate not declared. Charge of misbranding and paid fine of \$10 and costs.
11484	Sweet Cider, Sample from Carload Lot, Wilfred Langlois, Newmarket	Alcohol 0.85 percent. Not straight cider and contained benzoate not declared. Referred to Federal Dept.
11665	Sweet Cider Submitted from Manchester	Alcohol 1.00 percent
11794	Sweet Cider Submitted from New London	Alcohol 1.27 percent
11602	Sweet Cider on Sale at Rochester Fair	Alcohol 0.11 percent
10914	Sweet Cider, 4 hrs. old, Submitted from London	Alcohol 0.11 percent
11164	Hi-Brow Ginger Ale, Granite State Spring Water Co., Atkinson Depot, N. H.	Passed Sugar 8.71 percent No Capelcum.
11478	Ginger Ale, Nashua Tonic Bottling Co., Nashua	No foreign matter, but showed decomposition, with cloudiness of yeast cells.
12027	Ginger-Gee, Liberty Bottling Co., Buffalo, N. Y., Submitted from Manchester	Alcohol 0.05 percent. Good ginger flavor. Presence of benzoate illegal.
11647	Ginger Brand, D. Daoust Co., Manchester	Misbranded.
10873	Ginger Brandy, D. Daoust Co., Manchester	Misbranded Alcohol 0.68 pc
11479	Orange Squeeze, Natural Fruit Flavor Co., New Orleans, Nashua Tonic Bottling Co., Nashua	Improperly labeled Is not prepared from oranges.
11213	Whistle, Whistle Co., A. Connor, Newfields	Passed.
11597	Orangeade, On Sale at Rochester Fair	Passed.
11598	Orangeade, On Sale at Rochester Fair	Passed.
11599	Orangeade, On Sale at Rochester Fair	Passed.
11600	Orangeade, On Sale at Rochester Fair	Passed.
11601	Orangeade, On Sale at Rochester Fair	Passed.
10846	Extra Fine Sherry Wine, Imitation, D. Daoust Co., Manchester	Misbranded.
11156	Whiskey, Submitted from Keene, Question of Presence of Wood Alcohol	No wood alcohol.
10852	Grape Vinar, Taylor Wine Co., Rheims, N. Y.	Passed. Alcohol 0.48 percent.
11153	Whiskey, Submitted from Exeter, Question of Presence of Wood Alcohol	No wood alcohol.
12254	Whiskey, Submitted from Concord, Question of Presence of Wood Alcohol	No wood alcohol.
12260	Liquor Submitted by Medical Referee, Merrimac County, Question of Presence of Wood Alcohol	No wood alcohol.
11012	Whiskey, Submitted from Exeter, Question of Presence of Wood Alcohol	No wood alcohol.
11206	Lime Juice, United Drug Co., from Bulk	Acidity 7.69 percent. Adulterated with sulphur dioxide
11129	"Apple Juice," Submitted from Jaffrey	Alcohol 0.12 percent. No preservatives.

OLIVE OIL

Seven of the fourteen samples purporting to represent olive oil were found to consist wholly or in part of cottonseed oil. Most of these were from barrels or large cans, representing stock as found on sale at fruit stores. Information concerning findings was in each instance given to the Boston Station, U. S. Food and Drug Inspection, this resulting in a number of prosecutions of the shippers by the latter.

A case of misbranding was that of applying the designation "Finest Salad Oil" to a cottonseed product, the term "salad oil", unqualified, always implying olive oil.

OLIVE OIL

No.	Brand and Origin	Remarks
11777	From barrel, Ideal Market, Dover.	Passed.
11778	From barrel, Ideal Market, Dover.	Passed.
11527	"Pure Olive Oil," half-pint cans. James B. Tallis, Manchester.	Passed.
11321	From barrel, submitted from Dover.	Passed.
11288	From barrel, George Cargos, Dover.	Passed.
11130	"Pure Olive Oil," Angel Brand, Extra No. 1. In pint cans; submitted from Manchester.	Passed.
11055	From barrel, submitted from Concord.	Passed.
11201	"Finest Salad Oil," A. Perley Fitch Co., Concord.	Misbranded. Is cottonseed oil. (In the absence of any qualifying statement, "Salad Oil" means olive oil).
11290	From barrel, George Amenis & Co, Boston; Constantopoulos & Karaklas, Dover.	Adulterated with cottonseed oil. Referred to federal department.
11281	From barrel, submitted from Dover.	Mainly cottonseed oil.
11289	From barrel, Alpha Importing Co., New York City. J. G. Krikis, Somersworth.	50 per cent. or more cottonseed oil.
12151	From unbroken barrel, Alpha Importing Co., New York City. J. G. Krikis, Somersworth.	Adulterated with cottonseed oil. Shipper prosecuted by federal dept.
11754	Ten gallon pkg. Filone-Themo Co., Boston, Mass. Thos. Dimitrios, Nashua.	50 per cent. or more cottonseed oil. Reported to federal department.
11729	From barrel billed as "Greek Olive Oil" by Monstos & Cotsis, Boston, Mass. John Dogopoulos & Co., Nashua.	Mainly cottonseed. Shipper prosecuted by federal department.

CANDY

Examination of a number of samples of candy, some of these believed to have been responsible for illness, indicated no adulteration or any injurious substance. Exception was however taken to the methods of a local candy manufacturer in attempting to unload a "left over" of very low grade stock, consisting largely of glucose and which was said to have been frozen, through an appeal to the school children.

THE VITAMINE FAD

In connection with a sample of Page & Shaw's "Vitamine Chocolate," the sender was advised that while the product might very possibly contain the vitamine addition as claimed, yet the preparation was not to be commended, for the reason that through the use of a proper diet an abundance of these principles is thereby available not only in a normal and natural way but at very much less cost than is involved when such are consumed in the form of a high priced confection.

The recent discovery of these three life-giving elements in foods is a most interesting and valuable one from a scientific standpoint in that this knowledge not only assists us in the selection of an appropriate diet but it confirms and explains our previous knowledge concerning the necessity of including in the dietary certain types of food in order to insure a continuation of sound health.

It needs to be understood not only that man has been eating vitamines ever since the days of Adam, and in fact long before that time, but also that in every normal individual, as well as in animals, there is

implanted an instinct which causes an involuntary selection of these needed foods provided they are available. Thus the craving on the part of every normal person for fruits and vegetables and green foods is natural and is one which should be heeded.

While not a little is now being written for popular consumption concerning vitamins, yet there is undoubtedly considerable of both truth and common sense contained in the advice of one writer on this subject, to "eat three square meals a day and don't worry."

As usual there are those who have been quick to capitalize the public interest in this matter, the result being that the market is now flooded by so-called vitamin preparations and remedies. Although we would not go so far at this time as to declare that vitamin concentrates are valueless or that these may not eventually be so developed that their use under proper supervision may prove helpful for the improvement of certain conditions, yet we are safe in saying that in purchasing the pills and tablets as now being offered in this connection one is but wasting his money.

Incidentally it is well to understand that the vitamins cannot be chemically recognized or analyzed. Practically our only means of investigating or estimating these principles is based upon more or less elaborate and prolonged feeding experiments in which white rats, rabbits and pigeons are utilized.

It may be stated that most of the commercial products include powdered yeast as the major ingredient. Thus the composition of a so-called "vitamin" capsule as recently marketed is known to be: casein, 20%; powdered yeast, 40%; powdered egg yolk, 35%; maltococoa, 5%. Forty-two of these 5-grain capsules retail for one dollar under a label embodying extravagant claims.

EGGS

Notifications were issued in eleven instances where misapplication of the terms "fresh" or "strictly fresh" or equivalent designations, were noted. While none of these represented storage eggs, all were a number of weeks old. The use of the term "fresh western" in this connection is a misrepresentation and is illegal.

FLOUR

But one of the ten samples of flour examined was found to be abnormal. This sample, said to have come from the top of a twenty-four pound sack as retailed by a Concord dealer, was submitted with complaint that it made a peculiar appearing pie and that eating of this pie was the cause of violent illness of three members of a family.

Analysis of the flour in question disclosed the presence of approximately eight per cent. of arsenate of lead, which was apparently fairly uniformly distributed throughout the one pound sample as received, corresponding on this assumption therefore to a little less than a half pound of the arsenate in the five pounds as retailed.

This case presented a number of mysterious features and it is difficult to believe that the poison could have been introduced accidentally as sweepings from a car floor, according to one theory advanced. The latter would involve the presence of more or less dirt, lumps, woody fibres, bits of lint, etc., none of which were indicated by the microscopical examination, the flour itself being of nearly normal whiteness.

On the other hand an investigation of the local circumstances seemed conclusive of the absence of any likelihood of criminal or malicious tampering with the flour subsequent to sale. Nor were any reports received of other cases of illness on the part of those (unknown) to whom the balance of the sack in question was retailed. Examinations of samples representing the balance of the stock on hand at the store were wholly negative, and it was denied that any arsenate of lead was ever kept or had been used about this store, which latter dealt only in straight groceries.

The federal Food and Drug Inspection Department devoted considerable effort toward an attempt to trace this flour (which was brought from Boston on a truck) back to the original packers, but without success. Obviously if the arsenate of lead was not deliberately introduced, there was at least criminal carelessness involved somewhere.

GELATIN

A number of samples of bulk gelatins as employed by ice cream makers were collected with a view of gaining an idea as to the quality of this article, now almost invariably a constituent of commercial ice creams. For the purpose of comparison a few samples of brands as retailed in small cartons were also purchased.

This substance, in common with glue, is obtained from the bones, hide, horns, hoof, connective tissue, tendons and other nitrogenous matter of animals. Practically speaking, glue is merely inedible gelatin and the line of demarcation, which is not a very sharp one, is unfortunately not infrequently very carelessly drawn by the manufacturer. Thus while the "first run" gelatin is a high grade product, the difference as to quality between what is designated as "last run" gelatin and "first run" glue may not be very striking.

Edible gelatins should be prepared with extreme care, using only the clean, sound edible portions of the animal. The fleshings, as removed from the under part of the hides as received at tanneries, as well as other undesirable portions, which might conceivably harbor the germs of anthrax or tetanus, should not be, yet unfortunately are sometimes, utilized for this purpose.

Authorities agree that the solution of gelatin shall be clear and free from any gluey odor and that the odor of the dry material shall be devoid of any suggestion of offensiveness. A two per cent. solution of gelatin of satisfactory edible grade will, after standing for a few hours at refrigerator temperature, be firm and free from any suggestion of fluidity.

While no formal standards have as yet been adopted by the government, yet the Bureau of Chemistry regards the following as reasonable limits to be exacted of a gelatin suitable for food use: Ash, 2 per cent.; arsenic, 1.4 parts per million; copper, 30 parts per million; and zinc, 100 parts per million. No limits for bacteria or for sulphur dioxide have been published. The latter substance is generally employed as a bleaching agent and as an antiseptic during manufacture.

In the samples here reported the bacteria per gram ranged from no growth to 1,900,000, the latter being a decidedly excessive number.

Ash ranged from 0.73 per cent. (in Knox gelatin) to 3.19 per cent. in a product as found in use by a Manchester ice cream manufacturer. This sample, which was in dark amber flakes, also contained an excessive amount of zinc, afforded a semi-fluid two per cent. solution and the latter exhibited a decided gluey odor. It was really a glue.

In the cases of six other ice cream manufacturers copper was in excess of the limit, one of the two highest (50.4 parts) involving a sample as bought of a New York jobber and concerning which complaint had been made by the user, the latter having declined to pay for this shipment. This also had an excessive ash and a strong gluey odor, and was deemed to be inedible.

The lowest sulphur dioxide content in the samples as purchased ranged from 2.5 parts in the case of the Knox brand to 320 parts in the gelatin as used by a Derry maker. In this latter arsenic and zinc were also excessive. It is interesting to note however that the highest sulphurous acid content noted (431) parts was that of a lot of special imported sheet gelatin as purchased by us some ten years ago for the making of laboratory media. The ash of four samples, representing three other imported brands was in excess of the limit mentioned.

Of the thirteen samples representing gelatins as found in use for ice cream making, only one, that of the Puritan Confectionery Company, Manchester, as supplied by Joseph Middleby, Jr., Inc., Boston, was deemed to be satisfactory in every respect, although there were a number of others meriting no very serious criticism. The price of this gelatin to the user was one dollar per pound. The sample (No. 10840) representing the highest cost gelatin (\$1.10 lb.) was deemed unsatisfactory because of excessive arsenic content and failure to satisfy the physical requirements.

No.	Collected of	Manufacturer or Jobber	Gram at 25° C	Parts per Million				Hardness, 2 percent Solution	Character of 5 pc. Solution			Remarks
				Ash, Percent	Sulphur Dioxide	Arsenic	Copper	Zinc	Odor	Trans- parency	Reaction After 2 Days	
10754	B. F. Smith & Co., Lancaster	Plymouth Rock Gelatin Co., Boston, Mass.	10000	*	10.0	1.2	(1)	10.0	Good	Clear	Acid	Passed
10755	B. F. Smith & Co., Lancaster	Chas. B. Knox Gelatin Co., Johnstown, N. Y.	10000	0.73	2.5	0.1	10.3	4.0	Good	Clear	Acid	Passed
10758	Bell & Carlton, Lancaster	Cox Gelatin Co., New York	10000	2.19	20.0	(1)	(1)	(1)	Good	Clear	Acid	Ash Excessive
10758b	H. C. Sturtevant Co., Concord	Cox Gelatin Co., New York	2.43	0.5	25.2	(1)	(1)	20.0	Good	Clear	Acid	Ash Excessive
10761	C. H. Hamlin, Gorham	Plymouth Rock Gelatin Co., Boston, Mass.	10000	*	34.0	1.4	(1)	(1)	Good	Clear	Acid	Passed
10813	Paris Ice Cream Co., Manchester	Clarkson Gelatin Works, Chicago	100000	2.43	164.0	1.0	34.0	(1)	Decided Gluey	Opaque	Acid	Inedible
10814	Palace of Sweets, Manchester	H. A. Johnson Co., Boston, Mass.	500000	1.75	205.5	1.2	54.2	(1)	Semi Fluid	Opaque	Acid	Unsatisfactory
10815	S. M. Ernest, Manchester	Empire Coffee Co., Boston, Mass.	100000	1.63	171.0	1.3	(1)	20.0	Soft	Opaque	Acid	Unsatisfactory
10816(2)	Xaulkaky Bros., Manchester	C. J. Stevanat & Co., New York	200000	3.19	86.0	1.0	(1)	400.0	Soft	Opaque	Acid	Inedible
10817	Puritan Confectionery Co., Manchester	Jos. Middleby Co., Boston, Mass.	40000	1.50	13.7	1.2	7.6	4.0	Hard	Opalescent	Acid	Passed
10818	Pieroni Bros., Derry	(Unknown)	700000	1.71	320.0	2.5	16.4	200.0	Weak [Fluid after 2 days]	Cloudy	Acid	Unsatisfactory
10821	Coon Ice Cream Co., Manchester	(Unknown)	250000	1.77	30.0	2.5	41.6	20.0	Hard	Clear	Acid	Excessive Arsenic and Copper
10840	Anastos & Saggcoates, Newport	Logan-Johnson Co., Boston, Mass.	140000	1.69	116.4	2.5	(1)	(1)	Weak	Opaque	Acid	Unsatisfactory
10843		Harold Sinclair, New York (3)	280000	2.04	9.5	1.2	(1)	5.0	Hard	Cloudy	Acid	Passed
10844		Harold Sinclair, New York (4)	20000	2.37	6.8	1.3	(1)	20.0	Hard	VS Gluey	Acid	Ash Excessive
10847	M. & M. Bakeries, Dover	American Glue Co., Boston, Mass.	20000	1.58	95.9	0.5	41.6	20.0	Soft	Opaque	Alkaline	Unsatisfactory
10848	Brown & Beckwith Co., Dover	H. A. Johnson Co., Boston, Mass.	1900000	1.37	130.0	2.0	29.0	20.0	Hard	Bad After 2 Days	Alkaline	Bacteria, Arsenic Excessive, Unsatisfactory
10853	Nashua Candy Kitchen, Nashua	C. C. Campbell Co., Boston, Mass.	30000	1.96	308.0	0.1	37.8	60.0	Hard	Good	Acid	Passed
10854	Busy Bee Confectionery Co., Nashua	Limbirt Bros., New York	60000	1.62	95.0	1.0	(1)	(1)	V. Soft	Cloudy	Acid	Unsatisfactory
11252		Qualite Supérieure Brown, Young & Co., New York	430000	1.94	431.0	(1)	(1)	(1)	Hard	Good	Acid	(See text)
10654	J. R. Rowley, Massabesic		2.46	164.0	0.1	50.4	10.0		Decided Gluey	Opaque	Neutral	Inedible

* Phosphated Gelatin.

(1) Sample Insufficient.

(2) Flake Gelatin, Very Dark and Glue-Like.

(3) Delft Gelatin, "Superlative" Brand, Submitted by Importer.

(4) Delft Gelatin, "Imperial" Brand, Submitted by Importer.

(5) Imported Sheet Gelatin (old stock) Designed for Bacteriological Media.

CANNED FOODS

Following an investigation of stock at the "Army Supply Store," Manchester, E. B. Harris, Sales Director, the following articles were condemned and removed from sale:

- 53 cans bacon, 12 lb.
- 51 cans condensed milk
- 5 cans corned beef, 12 oz.
- 2 cans deviled ham
- 2 cans mock turtle soup
- 47 cans corned beef, 1 lb.
- 1 can meat balls
- 4 cans black cherries
- 1 can roast beef, 6 lb.
- 13 cans corned beef, 1½ lb.
- 156 cans roast beef 1 lb.
- 78 cans corned beef hash, 1lb.
- 2 cans corned beef hash, 2lb.
- 17 cans blackberry jam

Most of the above items were found to be in quite bad condition and that of all was such as to render them unsalable and of questionable safety as food.

In addition to the above, sale was also stopped on a lot of canned tomatoes, these being shipped back to the Boston headquarters of the concern. This lot included 445 cases of 24 2-lb. cans, or a total of a little over ten tons. While our examination indicated that a large proportion of these tomatoes was in perfectly salable condition, yet because of the considerable number of "off" cans encountered in going through the various cases, removal of the entire lot from sale was regarded as warranted.

In the case of the tomatoes but few of the cans found to be bad showed any bulge or swell, and microscopically a satisfactory degree of freedom from yeasts and mould was indicated. The features upon which condemnation was based were the "off" odor on opening, the blackened and highly corroded condition of the can, commonly with good sized tubercles of iron sulphide on the bottom, and in the proneness to rapidly darken, the can contents when poured into a porcelain dish, assuming a brownish-black hue within an hour. Analytically the lots so characterized all showed the presence of iron in material amount, dissolved from the can.

The chief cause of the condition of this entire lot of former army stores was undoubtedly excessive age, although faulty or careless methods of canning and particularly mishandling with resultant pinhole punctures, were also probable factors.

Another lot of canned food condemned concerned 30 cases containing 48 cans each of finnan haddie as found in a store house of Swift & Company, Dover. Examination of a number of these cases indicated about fifty per cent. of the cans in each to be swells. Request that this lot be removed from sale was complied with.

VINEGAR

Of the 21 samples of vinegar examined 10 failed to comply with the law. Most of these were farm-made vinegars deficient in acid.

The high price of cider vinegar has been a temptation to certain unscrupulous vinegar manufacturers to place on the market imitation products very skilfully prepared from apple waste, dilute acetic acid, artificial color and with addition of certain substances designed to cause the product to analyze like a true cider vinegar. Some of these manufacturers employ chemists who have become skilled at this kind of manipulation, the result being that the positive detection of such products by ordinary analysis is sometimes almost impossible and at the best it is a long and tedious process.

Herein is where the value of the factory inspection as carried out by the federal food and drug inspection department becomes apparent. A short time ago, as a result of the evidence thus collected against a well known Lowell concern, which in the past has done an extensive New Hampshire business and is known as having been a persistent and most adroit violator, a special conspiracy action was brought by the government against each of the three members of this firm, resulting in fines of six thousand dollars, and the signing of an agreement which so restricts the scope of operation that further violations on their part will be much less easy of accomplishment.

Under the New Hampshire law any product sold as cider vinegar must be "made solely of cider made of apples"; that is, it must consist solely of the product of fermentation of straight apple juice, with no additions of any kind. While complaint has been made to us recently of difficulty experienced by some local makers in securing a product which contained the required one and six-tenths per cent. of apple solids, yet there is reason to believe that the real basis of this difficulty, at least in most cases, is to be found in the illegal practice of second pressing of the pomace after addition of water—a practice which means nothing less than an adulteration.

Under the terms of a recent federal court decision, which finally sustains the position as taken in this matter by the U. S. Bureau of Chemistry, vinegar manufactured from evaporated waste must be labeled and sold as evaporated apple vinegar.

RESULTS OF SOME MISCELLANEOUS FOOD EXAMINATIONS

NO.	ARTICLE	RESULT
11159	<p>Easy Bread (for flesh reduction.) Doctor's Essential Food Co., East Orange, N. J.</p> <p>Bread. M. J. Surowiec, Franklin, from N. Ca. G's Ass'n., 204 Lake- view Ave., Lowell, Mass.</p>	<p>Is essentially a bran bread. Shows no evi- dence of added medicament.</p> <p>Unwrapped and weight not declared.</p>
11634	<p>Virginia Dare Lemon Extract. Double Strength. Barrett & Co., Brooklyn, N. Y.</p>	<p>Contained 10.6% lemon oil. Passed.</p>
11785	<p>Bell Brand Pure Extract of Vanilla. U. S. P. Alcohol 44%. Ocean Mills Co., Boston, Mass.</p>	<p>Misbranded. Not standard grade or grade represented and contents not declared.</p>
11223	<p>Bacorn's Fruit Extracts, Standard Quality Vanilla. Bacorn Co., Inc., Elmira, N. Y. Submitted by pros- pective agent.</p>	<p>Misbranded. An imitation extract.</p>
12110	<p>Sweet Clover Brand Pure Vanilla Extract. National Packing & Pre- serving Co., Boston, Mass. "Su- perior Flavor and Extra Strength."</p>	<p>Substandard. Misbranded. (Complaint of beverage use.)</p>
11633	<p>Capital City Brand Imitation Vanilla, 3 ounces. Wakefield Extract Co., Sanbornville. George H. Hobson, Concord.</p>	<p>Examination of fifteen bottles showed all short measure, this ranging from 2.63 ozs. to 2.9 ozs.; ave. 2.76 ozs.</p>
11758	<p>Garrett's Imitation RUM Extract, (Pint Bottles.) Extra Strong. Alcohol 42%. Garrett & Co., Inc., Brooklyn, N. Y.</p>	<p>Not properly labeled. (Complaint of beverage use.)</p>
12057	<p>Natural Brand Pure Extract. Straw- berry Flavor. Natural Products Co., 31 Fulton St., Boston, Mass. Used for flavoring ice cream by Purity Ice Cream Co., Concord.</p>	<p>An imitation. Misbranded. Use for ice cream manufacture illegal.</p>
12107	<p>Blackstone's Best Artificial Tutti Fruitti Extract. Blackstone Mfg. Co., Newark, N. J.</p>	<p>Passed. (Question if sale in violation of Prohibitory Law.)</p>
10945	<p>Foss' Pure Extract Vanilla. Schlot- terbeck & Foss Co., Portland, Me.</p>	<p>Alcohol 50.25 per cent. Passed. (Complaint of being consumed extensively as a bever- age.)</p>
10946	<p>Wakefield Brand Peppermint, 2 ozs. Wakefield Extract Co., Wakefield, N. H.</p>	<p>Alcohol, 78.66 per cent. Passed. (Complaint of being consumed extensively as a bever- age.)</p>
10947	<p>Foss' Pure Extract Lemon. Schlotter- beck & Foss Co., Portland, Maine.</p>	<p>Alcohol 80.00 per cent. Passed.</p>
10948	<p>Foss' Pure Extract of Checkerberry. Schlotterbeck & Foss Co., Portland, Maine.</p>	<p>Alcohol 66.50 per cent. Passed. (Complaint of being consumed extensively as a bever- age.)</p>
12339	<p>Leech's Golden Glow Flavoring. Con- taining the Pure Crystallized Prin- cipal Aromatic Constituent of the Finest Vanilla Bean U. S. P. Caram- el and alcohol, 8 fl. ozs. Price 75 cents. Arthur L. Leech Co., 16 Storer St., Kennebunk, Me. (Sold through church organizations.)</p>	<p>Misbranded, in that article is so labeled as to be misleading and deceptive and to convey the impression that it is prepared from vanilla bean, whereas it is in fact a cheap synthetic imitation of vanilla, prepared from artificial vanillin and containing none of the natural substance.</p>
11038	<p>Oranoleum Paste for Preparing Orange Syrup. The Murray Co., Boston, Mass.</p>	<p>An orange oil emulsion. Not permissible to label beverage prepared therefrom as "orangeade."</p>
11667	<p>Walker's Pure Extract of Jamaica Ginger, Double Strength. Walker Bros. Co., Boston, Mass. Guar- anteed to be U. S. P. Standard. 72 cases shipped to Philip Porter, Nashua.</p>	<p>Misbranded. Below U. S. P. requirement.</p>
11314	<p>Port Clyde Queen Sardines in Pure Olive Oil. Majestic Food Dist. Co., New York.</p>	<p>Misbranded. Are packed in peanut oil and corrected labeling not clear or no correction made.</p>
11971	<p>Skimmed milk. Believed to contain poison.</p>	<p>Examination negative.</p>

NO.	ARTICLE	RESULT
10897	Hood's Cultured Butter Milk. "Bottled at the churn." (Cut of churn on cap.) H. P. Hood & Sons, Charlestown, Mass.	Misbranded. Not a natural buttermilk as represented but a product made from milk by cultural means.
10868	Goat's Milk. Submitted from Plymouth.	Total solids 15.22% ; fat 5.3%.
11400	Skimmed Milk Powder. Submitted from Claremont. Starch suspected.	No starch. Passed.
11275	Condensed Skimmed Milk. Submitted from Claremont. Baker complains of peculiar results.	Is not skimmed milk but a sweetened condensed whole milk of standard quality.
12109	Cocoa (in quart preserve jar.) Packaged by Samuel Opler, Inc., New York.	Pure cocoa but low fat (14.98%).
12131	Cocoa (bulk.) Mohican Co., Concord. Retailed at 3 lbs. for 25c.	Pure Cocoa. Fat 24.30%.
12257	Maple Syrup. Produced by W. B. Walker, Jefferson.	Below standard. Ave. net wt. per gallon 10 lbs. 6 ozs.
12229	Maple Syrup. Fred S. Drew, Loudon.	Below standard. Solids 57.14%. Net wt. per gallon 10 lbs. 6 ozs.
11641	Ice-Set. For counteracting "stickiness" in candies. Berlin Mills Co., Berlin, Mfrs. Submitted by Treisman Bros. & Diversi, Concord.	A starch-like powder of fatty character. Tests indicate a hydrogenated peanut or similar oil. Use in chocolate coatings illegal.
11152	Pineapple Culture Bacillus Bulgaricus. "Prepared from fresh pineapple and grapefruit juice—with bacillus Bulgaricus." Franco-American Ferment Co., New York.	Bacteriological testing appears to substantiate claims for character.
11060	Frankfurts. Albert Thomas, Rochester.	Adulterated with cereal.
11307	Mrs. Curtis' Orangeade Paste. Emma E. Curtis, Melrose, Mass.	Passed.
11957	Green Peppers. Mohican Co., Concord.	Fruits showed extensive patches of lead arsenate.
11642	Presto Candy Hardener. Hong & Co., Inc., New York.	Saturated solution sodium bisulphite. Use in candy-making deemed illegal.
11243	Diet-Ease Gluten Flour. Potter & Wrightington, Boston, Mass.	Protein, dry basis, 44.45%. Passed.
11658	My Wife's New-Dessert. New-Dessert Co., Lowell, Mass.	Packet retailing for 10c contained 1-3 oz. consisting of corn starch with a little cocoa. Cost per lb., \$4.80; value, that of corn starch.

DRUGS AND PROPRIETARY REMEDIES

No. 10844. Atophan tablets. Submitted with complaint by physician of peculiar effects produced, these being a form of mania. Tests showed the preparation to be apparently true to name. According to a statement appearing in "Modern Materia Medica" it is essential to administer this preparation in conjunction with sodium bicarbonate in order to avoid precipitation of free uric acid with possible resulting renal colic.

No. 11962. Tablets, examined at request of solicitor of Strafford County for evidence of emmenagogue character. Examination negative.

No. 11526. Fluid labeled: "Essence of Checkerberry. Dr. Lord's Dispensary, West Ossipee, N. H." Submitted from Conway for the information of the attending physician and the county solicitor, the statement being that this was offered to the purchaser as a suitable substitute for the extract of ginger originally called for. Its use resulted in violent illness. The analysis indicated that this preparation was actually the straight undiluted oil (methyl salicylate) and therefore

twenty times the strength of the official alcoholic solution which it purported to represent. This is the second case of methy salicylate poisoning recently brought to our attention (the first resulting in a fatality). The fact that this compound behaves as an active poison when taken in excess needs to be appreciated by the public in view of the apparently rather common utilization of the extract at this time for beverage use.

No. 11827. Codeine Sulphate tablets, one-fourth grain. Moore & Co., Worcester, Mass. Submitted from Concord with claim of apparent inertness. Found to be as represented, containing 0.23 grains codeine sulphate per tablet.

No. 11542. Morphine sulphate tablets, one-fourth grain (not in original container), Complaint of apparent inactivity. Each tablet found to contain 0.215 grains morphine sulphate.

Nos. 11699-11702. Morphine Sulphate tablets. Four lots of tablets purporting to represent three strengths and two reputable brands, all contained in the original but broken packages, as submitted by an institution. Extended analyses conclusively demonstrated that none of these contained any morphine whatsoever, all representing codeine sulphate tablets of approximately one-fifth grain. Results of an investigation pointed to substitution on the part of an employee.

No. 10952. Fluid submitted by medical referee, Merrimack County. About one ounce contained in a bottle labeled "Manhattan Cocktails". No poison label. Claimed that a man who assumed the contents to represent a liquor expired instantly following a single swallow of the fluid. Analysis showed the latter to represent a strong solution of nicotine, the intensely poisonous alkaloid from tobacco and employed in this case as an insecticide. The desirability of seeing to it that all such preparations bear a cautionary label is obvious.

No. 10841. Potion Antilaiteuse. Dr. N. A. Sirois, Kamouraska, P. Q., Manchester agency in charge of J. A. Sirois, 189 Wilson St. Variety of medicinal claims made, most of which are fraudulent. Preparation consists of a mixture of epsom salt and powdered juniper berries. Patronage practically all French-speaking. An investigation in conjunction with the federal department resulted in all of this product being removed from sale, the proprietor being notified that the only medicinal claims permitted as to any future output must be confined to constipation and associated ailments.

No. 11053. Chipwa Indian Root Blood Purifier. Mrs. Lucy Royer, Manchester. "The greatest blood purifier, nerve strengthener and nutrient tonic known to man. Good for consumption, nervous diseases, paralysis, rheumatism, neuralgia, female weakness, heart disease, cholera morbus, pimples, fevers, chills, coughs, colds, indigestion, scrofula and all diseases of the blood, liver and kidneys, stomach troubles of all kinds, dyspepsia and constipation." Former claims for virtue as a cancer remedy had however been eliminated.

The methods of this old lady, who apparently conscientiously believed she was the benefactress of the suffering of her race, are interesting as being rather typical of the many such who are doubtless still doing business in a small way in all of the larger cities of northern New England. Such persons claim to, and really come to believe in the course of time that they do possess healing powers, in consequence of being "born with a caul", or some other mystic circumstance or condition. In this case the circular relates a touching story of the old Indian who, half frozen and at the point of exhaustion, was given shelter from the raging storm, and who, out of gratitude to his hostess, revealed to her the secret of the preparation of the all potent remedy of his tribe.

This as usual consisted of the old reliable epsom salt with two or three such simple herbs as mandrake, spikenard and sarsaparilla. While it appeared that at one time Mrs. Royer enjoyed no mean patronage as a medical practitioner, at present, in view of her age, the absence of a permit to use alcohol, and being restricted in her therapeutic claims virtually to constipation, her power to do any serious harm is now practically nil.

No. 11040. Best Catarrh Remedy. Mrs. Lucy Royer, Manchester. Consists of a solution of tannic acid in glycerine.

No. 11039. Remedies for all diseases; prescribed by Mrs. Bridget Lemay, Concord. This case is practically identical with the preceding one. In the absence of any medical training whatsoever Mrs. Lemay depends upon what she terms her "natural gift" in this respect, but denies she is doing any harm as she merely "takes the leavings of the regular doctors'" patients who would otherwise not recover anyway, as she says. Apparently she has done a rather extensive business, the surprising feature being that her clients have included persons of such intelligence and prominence as to be calculated to know better.

Mrs. Lemay claims to prepare her remedies (some six or eight in all) according to the needs of her patients. For example if she finds upon examination that her patient has one variety of heart disease (of which she distinguishes three) she prepares her medicine in a certain way, and if it is another form, something a little different is given. The diseases upon which she claims to "specialize" are asthma, rheumatism, kidney disease, heart disease, bronchitis, tuberculosis and catarrh. Most of her remedies are based upon roots and herbs but that for tuberculosis is a mixture of spruce gum and rock candy in alcohol.

As a result of our investigation Mrs. Lemay was notified that her remedies in the form as put out were in violation of the food and drugs law, and because of the obviously illegal character of her business she has also been denied an alcohol permit by the federal prohibition director.

No. 12148. Nervtone Tablets. A. F. Schambler, Mfr., 235 Union St., Manchester. Recommended for various ailments. Label claims "no dangerous drugs." Investigation showed the presence of arsenic and strychnine. Corrosive sublimate, admitted by the manufacturer to be an ingredient of the formula, was not present in the lot of tablets as examined. The falsity of this labeling was responsible for the deaths of two children in Augusta, Maine. This man has seen fit to discontinue the medicine business.

No. 11552. Angiolympe du Dr. P. Roux, Angiers, France. Examination at request of Superintendent of State Sanatorium, Glenclyff. The formula of this alleged remedy for tuberculosis is given as: glycoside d'iridee, 5 centigrams; distilled water, 2 c. c. in each ampoule. Represented as being a "vegetable extract" for intramuscular injection. Analysis of this preparation, which sells for eight dollars for less than one-half ounce (six days' treatment) showed it to consist of a one and one-half per cent. solution in water of what is almost wholly sugar with a possibility of the presence (not definitely demonstrated) of a small amount of some glucoside. Were, however, the extractive matter to consist wholly of two grains of this principle from iris, as represented, it is obvious that it could be of no possible value in the treatment of tuberculosis. Entry into this country has been denied this product.

No. 11083. Stock Conditioner Powder. Capital Food Company, Tiffin, Ohio. Composition said to include salt, glauber's salt, copperas, charcoal, sulphur, anise and wormseed. The presence of a large amount of salt was apparent. Wormseed was not identified and any sulphur was present in but trifling amount. The indiscriminate administration of preparations of this character to stock is based upon a misconception and farmers are advised that in bothering with such they are wasting their money.

No. 20248. Mt. Madison Spring Water. Mt. Madison Spring Co., Gorham, N. H. As put out by the original company this excellent table water was formerly grossly misbranded under the Food and Drugs Law in that it was distributed under a label representing it to be a "cure for dyspepsia, constipation, rheumatism, gout, diabetes, liver, kidney and bladder troubles, gravel, for reducing corpulency, freeing the blood of uric acid and giving new life and vigor to the entire system"—in short, a veritable fountain of youth, according to the proprietors. These fantastic claims have been abandoned by the new company, which proposes to market this water strictly upon its merits as a table water.

Based as it has been in such large part upon fraud and misrepresentation there has been little to commend the mineral water business as an industry in the past. Almost invariably what success has been attained has been founded upon unlimited advertising in conjunction with the liberal use of unwarranted or carelessly given testimonials from medical men and from chemists, many of the analyses as furnished by

the latter being inaccurate, and some of them, we regret to say, unquestionably "made to order." The true explanation of the "cures" resulting from a sojourn at a spring water resort is as a rule to be found in rest and liberal water drinking and not in any mysterious specific virtue inherent in the water itself.

In this instance our analysis, which also includes a hypothetical combination of the mineral radicals present, while demonstrating the Mt. Madison to be a spring water of high purity—and in this respect taking equal rank with any of the highly advertised table waters now on the market—nevertheless indicates that it contains no unusual ingredients, either as to character or amount. Undoubtedly there are many other spring waters of equal quality in New Hampshire.

Sanitary analysis	Parts in 100,000
Turbidity,	none
Sediment,	none
Odor,	none
Color,	0.00
Nitrogen as free ammonia,	0.0012
Nitrogen as albuminoid ammonia,	0.0012
Nitrogen as nitrate,	0.015
Nitrogen as nitrite,	0.0000
Chlorine,	0.07
Hardness,	3.1
B. coli (1 c. c.)	negative
B. coli (10 c. c.)	negative
Bacteria per c. c. at 37 degrees C. (1)	2
Bacteria per c. c. at 37 degrees C. (2)	1

Mineral analysis (hypothetical composition)

Sodium chloride (NaCl)	0.12
Sodium nitrate (NaNO ₃)	0.06
Sodium sulphate (Na ₂ SO ₄)	0.83
Potassium bicarbonate (KHCO ₃)	1.10
Calcium bicarbonate (Ca(HCO ₃) ₂)	3.89
Magnesium bicarbonate (Mg(HCO ₃) ₂)	1.13
Iron bicarbonate (Fe(HCO ₃) ₂)	0.007
Alumina (Al ₂ O ₃)	0.06
Silica (SiO ₂)	1.11
Total	8.37
Total solid residue (105 degrees C.) actual	6.42
Mineral residue (carbonates restored) actual	5.85
Carbonic acid (CO ₂) to form bicarbonate	2.52
	8.37

Nos. 20322, 20369. Poland Mineral Spring Water. Hiram Rick-
er & Sons, So. Poland, Maine. Request for information as to character
and purity being received from a Peterborough citizen who had been
using this water, a number of samples were purchased as found on sale.
A mineral analysis of this water as appearing upon the label and pur-
porting to have been made in 1875 claimed the following composition
(as recalculated upon the basis of parts in 100,000):

Sodium chloride,	0.45
Potassium sulphate,	0.27
Sodium carbonate,	0.23
Calcium carbonate,	2.11
Magnesium carbonate,	0.92
Iron and alumina,	trace
Silica,	1.92
Organic and volatile,	0.40

Total solid residue	6.31
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The results of sanitary analyses by us of a number of different
bottles of this water indicated:

	Parts in 100,000		
	Lot 1	Lot 2	Lot 3
Turbidity	none	none	none
Sediment	none	none	none
Odor	none	none	none
Color	0.00	0.00	0.00
N. as free ammonia	0.0008	0.0036	0.0004
N. as alb. ammonia	0.0020	0.0076	0.0074
N. as nitrates	0.150	0.150	0.150
N. as nitrites	0.0000	0.0000	0.0000
Chlorine		0.31	0.34
Hardness (soap)	4.4	3.6	
Iron	0.002		
B. coli (1 c. c.)	negative	negative	negative
B. coli (10 c. c.)	negative	negative	negative
Bacteria per c. c. at 37 degrees C.		6 (bttl. A.) 10 4 (bttl. B.)	

It is evident that this water does not differ in any substantial
respect, mineralogically, from the Mt. Madison water. The small degree
of mineralization does not, in fact, entitle it to the designation of min-
eral water and it is therefore to be deemed as misbranded in this respect.
A more serious criticism however is in the fact that the excessive pro-
portion of nitrates (oxidized nitrogenous matter) present, as determined
by the examination of a number of different bottles, representing deal-
ers in two different sections, is certainly incompatible with any special
claims for high purity.

No. 12309. Special M. Preservaline. The Preservaline Co., New York. "The greatest, best and only scientific preservative for milk, cream, buttermilk, etc." Use one-half to one tablespoonful to forty quarts of milk." This preparation, found on sale at the store of T. N. Taylor, Milan, and which consists of formaldehyde, is interesting as indicating the well known tendency of old frauds and abuses, long since dead and buried as involving any practice, to now and then raise their heads in feeble attempt at resurrection.

No. 11541. Non-Ferment. Gibson Snow Company, Buffalo, New York. "The most desirable preservative for cider, wines, canned fruits and vegetables." This consists of salicylic acid one ounce, sodium benzoate one-half ounce. The manufacturer was advised that the sale of this preparation would be deemed a violation of the law.

No. 11166. Wyandotte Sanitary Cleaner and Cleanser, J. B. Ford Co., Wyandotte, Michigan. Used largely by dairymen and bottlers as a cleansing agent. Because of numerous inquiries and an impression apparently abroad that this substance is of unusual composition and one which "cannot be chemically analyzed", examination was made of a sample. This indicated a refined soda ash containing 73.14 per cent. anhydrous sodium carbonate, with 25.75 per cent. water of crystallization. The old-time "washing soda" crystals contained 60 per cent. of water of crystallization.

No. 11828. Klen-Zit. Boston Electro Cleaner Co., Boston, Mass. This is in solution form and is essentially a mixture of ammonia and soda ash with inclusion of a large proportion of caustic (free) alkali.

No. 12304. Scrub-Not. Keene Washing Products Co., Keene. A white granular powder, slightly perfumed and with a pronounced odor of ammonia. Consists essentially of a mixture of soda ash, borax and an ammonium salt. No caustic alkali.

TOILET PREPARATIONS

A number of samples of bay rum and witch hazel were collected for the purpose of investigation as to possible presence of wood alcohol and also as to the situation with regard to medication as required under the Volstead Act.

While no medication is called for in the case of witch hazel, under the terms of a federal order issued February, 1920, it was required that bay rum be medicated through the addition of not less than one-fourth grain of tartar emetic per ounce. The advisability of this ruling was open to serious question. Based upon the theory of establishing repugnance through the production of emesis, yet this amount

is insufficient to decidedly impair the flavor and as salts of antimony are known to partake extensively of the poisonous character of the closely related element, arsenic, this form of medicament was a distinctly objectionable one.

Later the rule was modified to permit of the use of salicylic acid, five grains per ounce, and at the present time the manufacturer of toilet preparations has a choice of still other drugs.

Extract of witch hazel of standard quality will contain fourteen per cent. of alcohol, while the alcoholic content of bay rum should be not far from fifty per cent. (See table following.)

WOOD ALCOHOL

Although the analytical routine at this laboratory in connection with the examination of beverages, toilet preparations and of certain extracts and pharmaceutical preparations has usually included examination for wood alcohol, yet because of the popular interest in this subject since the enactment of the Volstead Act the matter has been given especial attention.

While it is unquestionably well for the public to be thoroughly educated to the dangers of wood alcohol in connection with the illicit use of liquors, yet there has been not a little gross exaggeration in connection with this subject as appearing in the press. It cannot be denied that this lurid literature has in some degree at least been inspired by certain organizations, and that its function is to frighten the people into securing the return of wines and beer.

Recently at least two local newspapers gave currency to a claim that "many a life would be saved" were people to appreciate the danger of wood alcohol poisoning from the use of methylated extracts and essences (inferentially these being common articles). In view of the fact that such practice of using wood or denatured alcohol in these preparations as formerly existed ceased many years ago, this statement constitutes an unwarranted reflection upon the extract makers and druggists of today.

Regardless of the predictions so freely made, the simple facts are that bona fide cases of wood alcohol poisoning due to use of illicit liquor are so rare relatively as to be a negligible factor. Any propaganda on the part of the prohibitionists based upon this issue is to be deplored, first because it is apparently untruthful and second because it only serves to place an argument in the mouths of the antiprohibitionists.

But one of the samples here considered (a hair tonic) showed any evidence of wood alcohol, the amount in this case, while distinct and its presence established beyond question, was so small as to suggest that denatured alcohol had been used. This was checked upon a number of bottles representing the same lot but as samples representing other lots afforded negative results and as the concern in question bears an excellent reputation, the conclusion seemed warranted that the occurrence was not intentional.

In the realm of "hair tonics" salicylic acid and borax seem to be the most popular germ and fungus-destroying agencies. In two instances however arsenious acid (probably in the form of Fowler's solution) was found in substantial amount. The propriety of the use of this skin disinfectant without proper declaration is certainly open to a question. One of these brands was collected from a large stock bottle at a barber shop and it may be seriously questioned if the operators had any idea they were dabbling on to their patrons a fluid of such potent character.

Other substances employed include quinine, resorcine, and capsicum, with cantharides also probably used to some extent—this last substance not being readily recognizable with certainty because of the absence of distinctive chemical tests.

For the purpose of dyeing the hair the old-fashioned and dangerous lead preparations still continue to be sold, some of these being decidedly open to criticism because of the misleading or insufficient labeling. Unfortunately there is no law serving to prevent their sale, nor do they come within the scope of the Food and Drugs Law unless claims for medicinal value are set forth.

Also objectionable and only less dangerous are those dyes based upon an ammoniacal solution of silver nitrate. An apparently popular article, now represented by several brands, is a so-called "henna" hair dye, represented as being a "vegetable" coloring. All of these however, so far as examined, have been found to be based upon the presence of substantial amounts of copper salts, although containing some henna, or a similar tannin-bearing herb.

One reprehensible compound found on sale as a hair coloring is known as "Inecto". This works on the principle of a photographic developer, solution "A" representing peroxide of hydrogen and serving for the production of color when brought in contact with "B", which proved to be an alcoholic solution of para-phenylene diamine, a highly poisonous substance. Apparently this is identical with the notorious preparation as formerly dispensed under the name of "Eau Sublime."

RESULTS OF ANALYSIS OF TOILET PREPARATIONS

No.	Article, labeling, etc.	Alcohol found %	Wood alcohol	Remarks
2594	Double Distilled Witch Hazel. Gould Witch Hazel Co., Boston, Mass.	12.42	none	No medicament.
10757	Double Distilled Witch Hazel. Alcohol 15%. P. J. Noyes Co., Lancaster.	6.65	none	No medicament. Very low in alcohol.
10756	Witch Hazel. Wilson Pharmacy, Berlin.	11.45	none	No medicament. Low in alcohol.
2595S	Extract Witch Hazel. Alcohol 14%. E. H. Barrett, Gorham.	6.00	none	No medicament. Very low in alcohol.
12183	Brewster's Witch Hazel. Alcohol 14.25%. C. E. Brewster Co., Dover.	13.90	none	No medicament.
10744	Witch Hazel Treble Distilled, U. S. P. Alcohol 14%. Salem Chemical & Supply Co., Salem, Mass.	20.50	none	No medicament.
10721	Cadruco Bay Rum, 51% Alcohol. Canton Drug Co., Canton, Mass.	50.14	none	Tartar emetic. Not properly labeled.
10745	Marvo Bay Rum Lotion, 20% Alcohol. Wm. H. Lovering Co., Binghampton, N. Y.	11.25	none	No medicament. Low in alcohol.
10759	Imported Bay Rum. Alcohol about 50%. Salicylic acid added. For external use only. J. E. Gould & Co., Portland, Maine.	48.19	none	Salicylic acid.
10742	Bay Rum, from bulk. Lothrop & Pinkham Co., Dover.	48.82	none	Salicylic acid. Package as dispensed not properly marked.
2598S	Superior Bay Rum, 50% Alcohol. For External Use Only. Brewer & Co., Worcester, Mass.	44.66	none	Salicylic acid.
2591	S. S. Pierce Co. Treble Dist. Porto Rico Bay Rum. S. S. Pierce Co., Boston, Mass.	47.02	none	No medicament.
10743	Bay Rum. Alcohol 58%. Medicated with salicylic acid. Eastern Drug Co., Boston, Mass.	47.55	none	Salicylic acid.
12018	Triple Distilled Porto Rico Bay Rum. For External Use Only. 50% alcohol. S. S. Pierce Co., Boston, Mass.	48.28	none	Tartar emetic.
12014	Bostonia Bay Rum. Medicated with Tartar Emetic. For External Use Only. Average Proof 100. Eastern Drug Co., Boston, Mass.	47.48	none	Tartar emetic. Not properly labelled.
12184	Brewster's Domestic Bay Rum. Alcohol 50%. Medicated. For External Use Only. C. E. Brewster Co., Dover.	46.00	none	Tartar emetic.
12012	Superior Bay Rum. 25% Alcohol. Poison. Caution. Mfrs. name not given. Sold by J. B. Varick Co., Manchester.	6.84	none	Tartar emetic. Very low in alcohol.
12010	D'Ormo Extrait Vegetal. Alcohol 75%. D'Ormo, Inc., New York.	75.80	none	No medicament.
11978	Cardinal Eau de Quinine. Alcohol 67%. Richard Hudnut, New York.	62.11	none	Includes quinine and borax.
12108	Noonan's Hair Petrole. Alcohol not over 25%. T. Noonan & Sons Co., Boston, Mass.	17.02*	none	Includes salicylic acid and about 12% refined mineral oil. Alcohol incorrectly declared.
12011	Newbro's Herpicide. 30% Grain Alcohol. Herpicide Co., Detroit, Mich.	28.39	none	Includes salicylic acid and borax.
12013	A La Corbeille Fleurie Eau de Quinine Compound Hair Tonic. Alcohol 68%. Ed. Pinaud, Paris.	65.75	none	Small amount quinine.
12181	Parker's Hair Balsam. For restoring color to gray or faded hair. (No cautionary label as to use.) Hiscox Chemical W'ks., Patchogue, N. Y.	none	—	Strong solution of lead acetate, with sulphur.
12158	Hay's Hair Health. For external use only. Philo Hay Specialties Co., Newark, N. J.	none	—	Solution of lead acetate, with sulphur.

* In aqueous portion.

No.	Article, labeling, etc.	Alcohol found percent	Wood Alcohol	Remarks
12177	Dr. Durand's Acme Hair Rejuvenator. Not a dye. Not injurious. Prevents hair from turning gray, etc. Parisian Hair & Corset Stores, Manchester.	none	—	Solution of lead acetate, with sulphur. Grossly misrepresented.
12189	La Toilette Francaise. The only successful, safe and scientific hair color restorer. Elite Restorer Co., Worcester, Mass.	1.66	none	Ammoniacal solution of silver nitrate. Misrepresented as to safety.
12074	Inecto-Rapid Gray Hair Remedy. "A. No. 4" (Two solutions.) Inecto, Inc., 818 Sixth Ave., New York.	—	—	Bottle "A" represents a solution of para-phenylene-diamine which is poisonous and highly objectionable for this purpose. "B" is a solution of hydrogen peroxide.
12017	Gillespie Scalp Invigorator. Alcohol 25%. For eczema, dandruff, etc. Gillespie Mfg. Co., Boston, Mass.	20.88	none	Composition includes glycerin, borax and capsicum.
12016	Westphal's Auxiliator. 55% grain alcohol. For the preservation, beauty and growth of the hair. For external use only. Paul Westphal, New York.	45.00	none	Composition includes glycerine and borax. No quinine, arsenic, salicylic acid or resorcin. Cantharides (?)
12186	Woodbury's Combination Hair Tonic. 20% alcohol. John H. Woodbury Inst., N. Y.	26.49	none	Basis is resorcin.
11085	Hair Shampoo Oil. Sample from bulk.	—	—	Perfumed olive oil.
11154	Mme. Fried's Henna. A vegetable hair coloring. Mme. Fried, 15 West 34th St., N. Y.	—	—	Henna or a similar herb with considerable copper and iron salts. (copper oxide 5.02%.) Misrepresented.
11026	Farr's Gray Hair Restorer No. 1. External Use Only. No lead or sulphur. Brookline Chemical Co., Boston, Mass.	—	—	An ammonical solution of silver nitrate.
10985	Wyeth's Sage and Sulphur Compound. Alcohol 5%. Wyeth Chemical Co., Inc., N. Y.	—	—	A solution of lead acetate, with sulphur. A misrepresentation.
12113	Pompeian Hair Massage (from bulk.) Alcohol 17%. Pompeian Mfg. Co., Cleveland, Ohio.	44.18	none	Contains borax, salicylic acid, quinine, arsenic and glycerine. Extractive matter (inclusive of glycerine) 11.33 gms. in 100 cc. (Compare No. 12334.)
12112	Ess-Tee-Dee. Stops dandruff, etc. For External Use Only. Smith F. Dustin, Chicago, Ill.	0.26	none	A solution of arsenic, with borax.
12111	Victor's Antiseptic Liquid Shampoo. T. Noonan & Sons Co., Boston, Mass.	none	—	Essentially a solution of soap. No arsenic, salicylic acid or borax.
12180	Danderine. To beautify the hair. Alcohol 9%. Knowlton Danderine Co., Chicago, Ill.	8.77	none	Basis is a solution of salicylic acid and borax.
12135	Flora de Lille Complexion Preparation. A liquid powder. Flora de Lille Co., Boston, Mass.	—	—	A suspension of bismuth subcarbonate, and calcium carbonate, with borax.
12187	Champlin's Liquid Pearl. 2% Alcohol. Champlin Mfg. Co., New York.	2.85	none	A suspension of bismuth subcarbonate and calcium carbonate.
12138	Cooper's Complexion Beautifier. Cooper & Co., Boston, Mass.	0.70	none	A suspension of bismuth subcarbonate and calcium carbonate.
12334	Pompeian Hair Massage. (5 oz. original package.) "Has five finely combined ingredients successfully used for years for stopping dandruff (etc.) For external use only. Keep out of children's reach. Alcohol 17%."	15.03	none	Contains borax, arsenic, quinine, and capsicum. Extractive matter 0.95 gms. in 100 cc. No glycerine or salicylic acid in this lot. In view of presence of arsenic question if cautionary labeling is adequate.

SUMMARY OF FOOD AND DRUG EXAMINATIONS

	Comformable	*Non-Comformable	Total
Beverages	15	14	22
Butter	1	9	10
Candy	10	0	10
Cream	41	3	44
Eggs	2	11	13
Flavoring extracts	3	10	13
Flour	9	1	10
Gelatin	7	12	19
Ice Cream	30	16	46
Milk	269	411	680
Olive oil	7	7	14
Vinegar	11	10	21
Miscellaneous foods	33	19	52
Drugs	8	7	15
Proprietary remedies	—	—	18
Toilet preparations			46

SANITARY FOOD INSPECTIONS

The last report of sanitary inspections as made of the various places where foods are sold or dispensed appeared in the Bulletin for October, 1919. Following the tabulated matter which gives the results of ratings as classified by businesses and by towns there is presented a general summary of the results covering the period from September 1, 1919, to April 30, 1922, and in this summary there are also included for purposes of comparison the corresponding totals and the results for the previous two-year period ending August 31, 1919.

From this it will be apparent that the net results of this work represent a substantial improvement. The proportion of "excellent" ratings, denoting special merit, has largely increased, this being also true of the "good," with a corresponding diminution in the "fair" classifications. And in the case of bakeries and of places dispensing soda water and ice cream there is a decided drop in the proportion of the "bad" ratings.

Attention should be called to the need of more strict regulation in the case of those now very numerous places where ice cream, soda water and minor lunches are served over a counter. In addition to the all-the-year-round places operated by druggists and confectioners, there is a multitude of "tea rooms" and roadside resorts, where the idea is to reap as large a harvest as possible during a brief season, in many cases the conditions and methods being practically but little better than is true of the one-day circus and fair lunch stands. There is good reason for requiring that all of these places be licensed and that they pay a small fee.

*Includes not only adulterated and substandard articles but also a number, some of which were meritorious, but classed as illegal because of defective or exaggerative labeling or shortage in weight. In collecting samples, articles liable to adulteration, and brands of unknown character are selected.

Yet even in the case of the all-the-year-round fountains and counters adequate facilities for the cleaning of glasses and eating utensils are too often lacking. While this is not true as a rule, yet it is not difficult to find instances where it is the practice to give these articles merely a cold water rinse during the rush of the day's business, with a regular washing when convenient or when the condition becomes such that this cannot be further postponed. To require that glasses, spoons, etc., be thoroughly washed with hot water and a cleansing agent following each use is entirely reasonable, and a rule to this effect, in line with those now in force elsewhere, will doubtless be shortly adopted by the Board.

SANITARY FOOD INSPECTION RATINGS

For the Period Beginning November 1, 1919, and Ending April 30, 1922.

Towns	Groceries and Provisions					Fruit and Confectionery				
	Excellent	Good	Fair	Bad	Total	Excellent	Good	Fair	Bad	Total
Belmont		2			2			1		1
Berlin	17	58	7	16	98	10	29	21		60
Claremont	11	33	26	4	74		13	1		14
Colebrook	4	5	1	1	11		18	6		24
Concord	22	73	48	3	146	8	70	25		103
Conway	1	5	1		7	1	10	3		14
Derry	4	20	11		35	6	27	2	1	36
Dover	11	34	21	3	69	7	30	21	6	64
Epping		1	2		3		3			3
Exeter	4	16	7		27	4	13	1		18
Franklin	11	36	15		62	3	12	12		27
Goffstown		8	2		10		2			2
Hampton	2	21	6		29	5	22	14		41
Hanover	1	1			2	1	1	1	1	4
Haverhill		1			1	1	1		1	3
Hillshoro		3			3		3	1		4
Hinsdale	1	6	7	1	15	1	12	4		17
Hooksett		1	1		2					
Keene	10	24	15	1	50	2	29	9		40
Laconia	5	27	18	4	54	8	30	10		48
Lancaster	2	13	1		16	3	5	2		10
Lebanon		3	7	1	11	2	6	2		10
Lisbon	2	3			5	2	1	1		4
Littleton	3	10	2		15	6	9			15
Manchester	14	175	110	24	323	24	107	60	10	201
Meredith		3	1		5		6	5		11
Milford	1	17	8	1	27	4	8	1		13
Nashua	21	80	69	15	185	8	25	38	7	78
Newmarket		11	12	1	24	10	7	7		17
Newport	1	12	8		21	2	7	3		12
Northumberland (Groveton)	1	3	3		7		5	1		6
Pembroke (Suncook)	2	11	1		14		4	5	1	10
Peterborough	1	16	1		18	2	7	1		10
Pittsfield	2	2	3		7	1	4	3		8
Plymouth		11	1		12	2	4	4		10
Portsmouth	10	40	31	7	88	6	33	27	3	69
Rochester	5	10	5		20	2	21	17		40
Rollinsford		3	3		6		1	1		2
Salem		2	2		4					
Somersworth	3	21	17	1	42	5	19	6	3	33
Tilton	1	5	2		8	3	9	2		14
Whitefield	1	3	2		6	3	3	1		7
Wolfboro	2	5	1		8	2	8	4	1	15
All other towns	23	152	99	9	283	15	87	41	9	152
Totals	200	986	577	91	1854	139	704	384	43	1290

SANITARY FOOD INSPECTION RATINGS (Continued)

Towns	Hotels and Restaurants					Bakeries				
	Excellent	Good	Fair	Bad	Total	Excellent	Good	Fair	Bad	Total
Berlin		27	13	2	42	3	8	7		18
Bethlehem	18	26	10	2	51					
Carroll	7	15	8	0	30					
Claremont	13	10		4	27		4	6		10
Colebrook	2	5	3		10					
Concord	4	32	40	5	81	1	13	5	1	20
Conway	6	17	20	3	46		2	3		5
Derry	3	13	3	1	20		4	6		12
Dover	1	18	21	1	41	2	3	1		4
Exeter	8	5	7	2	17		3			3
Franklin		20	14		34		1	3	1	5
Goffstown		3	1		4					
Gorham		2	1		3					
Hampton	13	56	15	1	85	1	2	1		4
Hanover	1	2			3					
Haverhill	4	7	2		13					
Hillsboro	1	1	5		7			1		1
Jefferson		5			5					
Keene	6	22	16		44		1	2	1	4
Laconia	5	30	11	1	47	1	7		4	12
Lancaster		4	3		7					
Lebanon	1	4	3		8					
Lisbon	2	5	2		9					
Littleton	4	9	5		18					
Manchester	5	59	35	11	110	2	9	14	3	28
Milford		5	2		7			1		1
Nashua	14	11	14	2	41	1	11	12	5	29
Newmarket		3	2		5					
Newport		11	5	2	18	1	3	1		5
Northumberland		8	3		11					
Pembroke (Inc. Suncook)		5	3		8		1	1		2
Peterboro	3	5	4	1	13		1	3		4
Pittsfield		1			1					
Plymouth	4	11	6	1	22					
Portsmouth	7	41	30	5	83		10	10	2	22
Rochester		23	30	1	54		1	5		6
Rye	7	1	1		9					
Salem		3			3					
Somersworth	2	2	6	2	12	1	3			4
Sunapee	6	11	4		21					
Tilton	2	8	1		11		3	1		4
Whitefield	1	9		1	11					
Wolfeboro	1	10	4		15					
All other towns	36	154	70	4	264	2	13	9	1	25
TOTALS	177	629	423	52	1281	15	100	92	18	225

SANITARY FOOD INSPECTION RATINGS (Continued)

Towns	Soda Water and Ice Cream					Dairy Products				
	Excellent	Good	Fair	Bad	Total	Excellent	Good	Fair	Bad	Total
Berlin		6	6	2	14		1	1		2
Claremont		2			2					
Concord		3			3	2	2	2		6
Conway							2	3	1	6
Derry		1	1		2					
Dover	1	5	2		8	1	10	11	5	27
Exeter		3			3					
Franklin		1	1		2		5	4	3	12
Keene		1			1					
Laconia						1	5	4	2	12
Manchester	2	10	9	1	22		2	1		3
Milford							7	5		12
Nashua		9	6	1	16	6	6	6	1	19
Pembroke (inc. Suncook)		1			1					
Portsmouth		3	2		5					
Rochester		8	9	4	21		1			1
Somersworth							5	1		5
All other towns	1	9	5		15	9	65	41	15	137
Totals	4	62	41	8	115	19	111	86	27	243

SUMMARY OF RESULTS OF SANITARY FOOD INSPECTIONS

(With comparison of those for the period Sept. 1, 1917 - Aug. 31, 1919.)

	Total		Excellent per cent		Good per cent		Fair per cent		Bad per cent	
	'19-'22	'17-'19	'19-'22	'17-'19	'19-'22	'17-'19	'19-'22	'17-'19	'19-'22	'17-'19
Groceries and Provisions	1854	897	10.8	2.4	53.1	35.9	31.1	55.6	5.0	6.1
Fruit and Confectionery	1270	592	12.3	2.2	54.6	35.6	29.8	57.0	3.3	5.2
Restaurants and Hotels	1281	699	13.8	2.6	49.1	45.7	33.0	40.0	4.1	8.7
Bakeries	225	232	6.7	2.1	44.4	28.9	40.9	46.5	8.0	22.5
Soda Water and Ice Cream	115	163	3.5	1.2	53.9	42.3	35.7	44.2	6.9	12.3
Dairy Products	243		7.8		45.7		35.4		11.1	

ENFORCEMENT OF INFLAMMABLE POLISH LAW

A number of catastrophes, some of these involving fatalities, due to the use of inflammable stove and metal polishes, was responsible for the enactment in 1921 of a law designed to restrict the use of such preparations. Following is the text of this law:

CHAPTER 101

An Act to Regulate the Manufacture, Storage and Sale of Inflammable Polishes

"Section 1. It shall be unlawful to manufacture for sale, keep for sale, or sell, in packages of less than one quart, liquid, or one pound paste form, any article or compound designed or intended as a polish, which will flash at a temperature below one hundred and twenty degrees Fahrenheit, open cup test. Nor shall polishes so flashing be manufactured, stored, kept, sold, or supplied in larger packages than herein specified unless such packages shall be conspicuously branded in red with the words: 'DANGEROUS INFLAMMABLE COMPOUND. KEEP FROM FIRE, HEAT AND LIGHTS'.

"Section 2. Any person, firm or corporation violating any provision of this act shall be punished by a fine not exceeding one hundred dollars.

"Section 3. This act shall take effect upon its passage, and the provision of Chapter 185, Laws of 1917, as amended by Chapter 88, Laws of 1919, is hereby repealed."

Approved April 12, 1921.

It should be noted that the provisions of this statute have the effect of prohibiting the manufacture and sale for domestic or family use of any variety of readily inflammable polish. The act applies not only to those highly dangerous and most reprehensible forms of stove polish prepared with gasoline, the use of which has resulted in many fatalities, accidents and suits for damages, but as well to polishes for shoes, metals, furniture, floors, automobiles, etc.

An exemption is made in favor of large packages (one quart or more) appropriate for industrial use, as by factories, stores, shops, public garages, etc., provided such packages are properly labeled to indicate their inflammable character. The only reason for this exemption was in order to avoid causing embarrassment in connection with certain preparations favored in the trades and used under suitable precautions by workmen familiar with their character.

As was perhaps to be expected, and was in fact freely predicted by two or three manufacturers at the time the provisions of this law were promulgated, a few instances very shortly came to our notice of attempts to evade the spirit and intent of this law through the placing on the market of specially labeled inflammable liquid stove polishes in

quart packages. One of these concerned a New Hampshire manufacturer who had achieved a most unenviable reputation throughout New England in connection with the numerous accidents which had resulted from the use of his preparation. The samples as collected however were all found to be short measure, and, conditioned upon a complaint for prosecution not going forward in this instance, this man has definitely promised to discontinue absolutely the making of inflammable polish.

Shortly thereafter the only other manufacturer whom we have found similarly involved, evidently deciding that it would be the best policy in the end to abandon this attempt at evasion, likewise proceeded to change his formula. This step was taken after it was pointed out that there are plenty of excellent non-inflammable stove polishes on the market, that, while they may be a little cheaper, there is no necessity and no adequate justification for the inflammable forms, and that this department would take every means possible for the discouragement of their sale, securing if necessary an amendment of the law in question at the next session. Likewise, in the cases of the other varieties of polish concerned it became apparent from our investigation that there is no real justification for the inflammable characteristic, brands of the highest repute in all these lines being found to be wholly devoid of this quality.

In this connection there are a number of non-inflammable solvents or vehicles available to manufacturers, the best known of which is carbon tetrachloride. The latter, which is the basis of a number of well known fire-extinguishing fluids, need not be the only ingredient of the solvent. Investigations by us and by others have shown that by a proper blending of this compound with denatured alcohol, with certain higher boiling (but by themselves inflammable) petroleum distillates, and even with gasoline, fluids result which may be accepted as satisfying the law and which, for all practical purposes, may be considered as non-inflammable.

The principle involved is of course in the fact that the vapor blanket of carbon tetrachloride resulting with any elevation in temperature effectively serves to prevent combustion. Experiments have shown that for an entirely satisfactory product, the proportion of tetrachloride should range from one-half to two-thirds (depending upon the nature of the inflammable ingredient) although in some cases as little as one-third was found sufficient to insure a preparation which complied with the law.* In this connection some little assistance and advice has been given by this department to a number of manufacturers, who have thereby been able to so modify their preparations as to comply not only with our law but with that of any other which might in the future be enacted in this respect.

*An article of interest in this connection is entitled "Non-Inflammable Mixtures of Organic Solvents for Vegetable Oil Extraction," appearing in *Chemical & Metallurgical Eng.*, March 29, 1922, (Vol. 26, No. 13, p. 608.)

Incidentally the opportunity has been taken to criticise the reprehensible practice as followed by some polish manufacturers of utilizing oil of mirbane as a scent. It is definitely recognized that headache is the least serious manifestation resulting from inhalation of the vapors of this poisonous compound such as would be disseminated throughout an apartment when preparations containing this substance are applied to stoves or to woodwork. The smallness of the amount used, as argued by these manufacturers, does not extenuate, as deaths have resulted due to the presence of mirbane as used for this purpose in such articles as soap and shoe polish. A severe though non-fatal case of this character, involving a Claremont shoe finisher, was brought to the attention of this Board some time ago.

Of a total of 129 brands of polish, collected shortly after the law went into effect, 80, or 62 per cent., were found to comply with the non-inflammability requirement. This is considered satisfactory in view of the newness of the law and the time naturally required by manufacturers to meet its provisions. It is also suggestive that compliance is practicable and need entail no serious difficulties. Including duplicate collections and special mixes as submitted by manufacturers, the total number of samples examined is considerably greater than this. Classified, the results are as follows:

	Flashing at:		Total
	120 degrees or over	Under 120 degrees	
Stove polishes	21	19	40
Metal polishes	11	6	17
Furniture and auto polishes	21	9	30
Shoe polishes	25	11	36
Grease removers	2	4	6

While the temperature specification is 120 degrees, as compared to 100 degrees as provided by a similar Massachusetts law (limited to stove polish), actually the requirements are approximately equivalent, in view of the higher values afforded by the open cup method, specified by the New Hampshire statute. It is interesting to note that with a majority of the samples the dividing line between the inflammable and non-inflammable products was very sharply drawn; that is, most of these were either decidedly inflammable (flashing well under 100 degrees F.), or else the flash was above the temperature of boiling water (212 degrees F.). Consequently a large share of the samples could be rapidly disposed of based upon whether these flashed at room temperature (70-80 degrees F.) or failed to flash at the temperature of a boiling water bath.

STOVE POLISHES

FLASHING AT 120 DEGREES F. OR OVER

No.	Brand	Manufacturer	Remarks
11411	Vulcanol.	J. L. Prescott Co., New York.	Passed.
11415	Vulcanol.	J. L. Prescott Co., New York.	Passed.
11417	Vulcanol.	J. L. Prescott Co., New York.	Passed.
11820	Stovink.	Johnson's Laboratory, Worcester, Mass.	Passed. Water solution of a copper salt.
11801	Royal Worcester Stove Pol- ish. Fire Proof. Absolu- tely safe.	Royal Worcester Polish Co., Worcester, Mass.	Passed.
11808	Sun Stove Polish.	J. L. Prescott Co., New York.	Passed.
11805	Rutland Non-Inflammable Liquid Stove Polish.	Rutland Fire Clay Co., Rutland, Vt.	Passed.
11804	X-Ray Stove Polish. Can- not explode.	J. L. Prescott Co., New York.	Passed.
11809	Black Knight Stove Polish. Non-Inflammable.	F. F. Dolley Co., Inc., New York.	Passed.
11468	Polly's Big 3 Stove Oil.	Fred'k. J. Stearns, Manchester.	Passed.
11418	Black Knight Stove Polish. Non-Inflammable.	F. F. Dooley Co., Inc., New York.	Passed.
11416	Black Knight Stove Polish. Non-Inflammable.	F. F. Dolley Co., Inc., New York.	Passed.
11877	Beacon Stove Polish. Will not take fire.	S. S. Pierce Co., Boston, Mass.	Passed.
11876	Liquid Enameline Fire Proof Liquid Stove Pol- ish.	J. L. Prescott Co., New York.	Passed.
11874	Pingo Shine Wax Stove Polish. Fire Proof.	Pingo Co., Boston, Mass.	Passed.
11405	Black Crow Special. For stove lids.	Lussier & Sarette, Manchester.	Passed. Water solution of a copper salt.
11798	Dazzle No. 3 Stove Polish.	J. L. Prescott Co., New York.	Passed.
11807	Dazzle No. 1 Stove Polish.	J. L. Prescott Co., New York.	Passed.
11463	Rival Stove Polish. (New formula.)	John Danais, Manchester.	Passed.
11406	Rival Stove Polish. (New formula.)	John Danais, Manchester.	Passed.
11544	Eagle Liquid Stove Polish. Will not take fire.	Williams Stove Lining Co., Taunton, Mass.	Passed.
11620	Satin Gloss C. A. B. Stove Polish. Non-Inflammable.	Satin Gloss Stove Polish Co., Portland, Maine.	Satisfies inflammability test but objectionable because of use of a poisonous oil as a scent.
11878	Satin Gloss C. A. B. Stove Polish. Non-Inflammable.	Satin Gloss Stove Polish Co., Portland, Me.	Satisfies inflammability test but contains a poisonous oil.
12225	Satin Gloss C. A. B. Stove Polish. Non-Inflammable.	Satin Gloss Stove Polish Co., Portland, Me.	Satisfies inflammability test but contains a poisonous oil.
11780	Liquid Lustre Stove Polish.	Sun Chemical Co., Boston, Mass.	Passed.
12219	New Ideal Stove Polish. Fire Proof.	A. Perras, Manchester.	Passed.
12251	Bright Stove Polish. (New formula.)	S. Belisle Mfg. Co., Biddeford, Me.	Passed.
11845- 9	Black Iron Stove Polish. (Mass. and N. H. form- ula.)	Merrimack Packing Co., Lawrence, Mass.	Passed.

STOVE POLISHES

FLASHING UNDER 120 DEGREES F.

No.	Brand	Manufacturer	Remarks
11306	Rival Stove Polish. Contains Naphtha. One-half pint.	John Danais, Manchester.	Gasoline. Highly inflammable. Half pint.
11453	Rival Stove Polish. Contains Naphtha.	John Danais, Manchester.	Gasoline. Highly inflammable. Contents 80.5 ozs.
11380	Rival Stove Polish. Contains Naphtha.	John Danais, Manchester.	Gasoline. Highly inflammable. Half pint.
11286	The Bright Stove Polish. Do not let the liquid come in contact with fire.	S. Belisle Mfg. Co., Biddeford, Me.	Gasoline. Highly inflammable. Half pint.
11300	Black Iron Stove Polish. Do not use on hot stove. Keep away from flame and fire. (Ordinary formula.)	Merrimack Packing Co., Lawrence, Mass.	Gasoline. Highly inflammable. Half pint.
11440	Stove Polish. Contains Naphtha and should be used on coll stove only.	E. A. St. Francois, Nashua.	Gasoline. Highly inflammable. Half pint.
11464	World's Most Brilliant Stove Polish. Contains Naphtha (etc.)	J. A. Whitmore, Manchester.	Gasoline. Highly inflammable. 7 ozs.
11439	Black Cat Stove Polish. This is a turpentine polish. Also contains naphtha. Unsafe when exposed to fire.	J. L. Prescott Co., New York.	Gasoline. Highly inflammable. Half pint.
11454	Nashua Stove Polish. Contains naphtha (etc.)	A. E. Charpentier, Nashua.	Gasoline. Highly inflammable. Pint.
11455	Nashua Stove Polish. Contains Naphtha (etc.)	A. E. Charpentier, Nashua.	Gasoline. Highly inflammable. Half pint.
11604	Black Crow Stove Polish. (Ordinary.) Contains naphtha (etc.)	Lussier & Sarette, Manchester.	Gasoline. Highly inflammable.
11677	Emergency Stove Polish. Contains naphtha (etc.)	Emergency Stove Polish Co., Manchester.	Gasoline. Highly inflammable.
11781	Beacon Star Stove Polish. Do not let come in contact with fire.	Beacon Star Polish Co., Manchester.	Gasoline. Highly inflammable. Half pint.
11538	Brilliant Stove Polish. Do not let come in contact with fire.	National Stove Polish Co., Biddeford, Me.	Gasoline. Highly inflammable. 14 ozs.
11775	Sunshine Cold Stove Polish. Do not let come in contact with fire.	Sunshine Stove Polish Co., Biddeford, Me.	Gasoline. Highly inflammable. 12 ozs.
11779	Brilliant Stove Polish. Dangerous. Keep away from fire.	Alfred Perras, Manchester.	Gasoline. Highly inflammable. Half pint.
11693	Selden's Liquid Stove Polish. Inflammable mixture.	Selden Chemical Co., Portsmouth.	Gasoline. Highly inflammable. Half pint.
11697	Blackene Stove Polish. The Modern Benzene Liquid Unsafe when exposed to Heat or Fire.	J. L. Prescott Co., New York.	Gasoline. Highly inflammable. 6 ozs.
11698	Shine Bright Liquid Stove Polish. Contains Benzene (etc.)	Gosselin Bros., Berlin.	Gasoline. Highly inflammable. Half pint.
11537	Cote's Magic Stove Polish. Contains Naphtha (etc.)	Capital Magic Water Co., Augusta, Me.	Gasoline. Highly inflammable. Half pint.
11436	Stove Polish. Must be used on a slightly warm Stove (?)	E. A. St. Francois, Nashua.	Turpentine. Inflames at room temp. Half pint.
12218	Z. B. Stove Polish. Apply when stove is cold.	Z. Berlinguette & Co., Manchester.	Gasoline. Highly inflammable.
12226	Gloss Black. For use on sheet iron articles, such as stove pipe, gas stoves, oil stoves, ovens, etc. (No cautionary labeling.)	S. M. Howes Co., Boston, Mass.	Inflames at room temperature. Classable as paint but should bear a cautionary label.

METAL POLISHES

FLASHING AT 120 DEGREES F. OR OVER

No.	Brand	Manufacturer	Remarks
11888	Signet Brass and Nickel Polish.	Russia Cement Co., Gloucester, Mass. (None given.)	Passed.
11890	Parrot Metal Polish. Will not burn or explode.		Passed.
11898	S. O. S. Polishes aluminum ware.	S. O. S. Mfg. Co., Chicago.	Carton containing steel wool.
11892	Brillo Aluminum Utensil Cleaner and Polish.	Brillo Mfg. Co., N. Y.	Carton containing steel wool.
11462	Thumb's Sunshine Brass and Enameled Bed Polish.	E. W. Thumb, Chicago.	Passed.
11581	Radioglos. For silver, brass, nickel, glass.	Lindsay Light Co., Chicago.	Passed. Cake form.
11580	Silver Bright.	Colgate & Co., New York.	Passed. Paste form.
11559	Kimball's White Metal Polish. Non-Inflammable.	C. M. Kimball Co., Winthrop, Mass.	Passed.
11579	Kimball's White Metal Polish. Non-Inflammable.	C. M. Kimball Co., Winthrop, Mass.	Passed.
11578	Royal Brass Polish. Non-Inflammable.	Paul Mfg. Co., Boston, Mass.	Passed.
11566	Electro-Silicon.	Electro-Silicon Co., New York.	Passed. Loose powder.
11561	Cando Royal Silver Polish.	Cando Co., Boston, Mass.	Passed. Paste form.

METAL POLISHES

FLASHING UNDER 120 DEGREES F.

No.	Brand	Manufacturer	Remarks
11885	Blue Ribbon Cream Metal Polish. (In small type) Inflammable Mixture, etc.	International Metal Polish Co., Indianapolis, Ind.	Contains gasoline and ammonia.
11401	Grady's Liquid Scourer. For brass, copper, nickel, etc. Inflammable mixture.	Grady Mfg. Co., Long Island City, N. Y.	Ignites at room temperature. Contains oil of mirbane.
11565	Grady's Liquid Scourer. Inflammable mixture.	Grady Mfg. Co., Long Island City, N. Y.	Ignites at room temperature.
11389	Palace Ne Plus Ultra Metal Polish. Does the work quickly on both hot and cold metal.	Butler Bros., New York.	Gasoline and ammonia. No cautionary labeling.
11302	Kimball's White Metal Polish. Contains naphtha (etc.)	C. M. Kimball Co., Winthrop, Mass.	Ignites below 60° F.
11545	Kimball's Perfect Metal Polish. Contains naphtha (etc.)	C. M. Kimball Co., Winthrop, Mass.	Ignites at room temperature. Pint size.
11630	Lusterine Auto Metal Polish.	Fiebling Chemical Co., Milwaukee, Wis.	Ignites at room temperature.

FURNITURE AND AUTOMOBILE POLISHES

FLASHING AT 120 DEGREES F. OR ABOVE

No.	Brand	Manufacturer	Remarks
11521	Wonder Worker Brilliant Lustre	Hall-Thompson Co., Hartford, Conn.	Passed.
11472	Lyknu Polish (modified formula.)	Lyknu Polish Mfg. Co., Pittsburgh, Pa.	Passed.
11371	Jaquith Piano and Auto Polish.	F. L. Jaquith, Keene.	Passed.
11471	Thumbshine Sunshine Polish for Furniture, Pianos, etc.	E. W. Thumb, Chicago.	Passed.
11465	Wondermist Cleaner and Polish. Non-Inflammable.	Wondermist Mfg. Co., Boston, Mass.	Passed.
11467	Japanese Furniture Polish.	World Polish Co., Inc., Rochester, N. Y.	Passed.
11567	Wax Floor Oil. Makes good furniture polish.	Salem Chemical & Supply Co., Salem, Mass.	Passed.
11387	Cedar Oil Polish.	Salem Chemical & Supply Co., Salem, Mass.	Passed. 6 ozs.
11573	Cedar Oil Polish.	Salem Chemical & Supply Co., Salem, Mass.	Passed. One pint.
11379	Ruby Gloss Cedar Polish.	E. W. Hayden Co., Toledo, Ohio.	Passed.
11621	Everybody's Liquid Gloss.	Tate Mfg. Co., Inc., Boston, Mass.	Passed.
11569	Visco Cedar Oil Polish.	Visco Chemical Products Co., Cleveland, O.	Passed.
11562	Rice & Danziger's Cedar Oil.	Rice & Danziger, New York.	Passed.
11402	Wax Floor Oil.	Salem Chemical & Supply Co., Salem, Mass.	Passed.
11558	Leavitt's Scotch Polish.	Gilbert Leavitt, Boston, Mass.	Passed. (Small bottle.)
11536	Gilbert Leavitt's Scotch Polish.	Gilbert Leavitt, Boston, Mass.	Passed. (Large bottle.)
11632	Minard's Ol-In-Ol. Non-combustible.	Minard Co., Framingham, Mass.	Passed.
11550	Shale's Oil. (new formula.)	Alfred Shales, Newton Lower Falls, Mass.	Passed.
11848	Lyknu Polish (modified formula.)	Lyknu Polish Mfg. Co., Pittsburgh, Pa.	Passed.
11564	Ray Auto Lustre.	Fred'k J. Stearns, Manchester.	Passed.
11563	Sutherland's Polishing Cream.	P. Sutherland & Co., Boston, Mass.	Passed.
11557	Minard's Ol-In-Ol.	Minard Co., Framingham, Mass.	Passed.
11375	Common Sense Auto Polish.	Common Sense Mfg. Co., St. Louis, Mo.	Passed.
11461	Reliable Furniture Polish.	Hartnett Co., Bath, Me.	Flash point O. K. but contains poisonous oil. (mirbane.)
11384	Shine Auto Polish.	Pioneer Mfg. Co., Cleveland, O.	Passed.

FURNITURE AND AUTOMOBILE POLISHES FLASHING UNDER 120 DEGREES F.

No.	Brand	Manufacturer	Remarks.
11556	Lyknu Polish.	Lyknu Polish Mfg. Co., Pittsburgh, Pa.	Flashes at room tempera- ture.
11631	Victor Auto Body Polish	Fiebling Chemical Co., Milwaukee, Wis.	Flashes at 105° F.
11412	Sta-Brite Polish.	Sta-Brite Mfg. Co., Titusville, Pa.	Flashes at 85° F.
11467	Shales Oil.	Alfred Shales, Newton Low- er Falls, Mass.	Ignites at room tempera- ture.
11410	Johnson's Prepared Wax.	S. C. Johnson & Son, Racine, Wis.	Ignites at room tempera- ture.
11466	N. H. Furniture Polish.	A. Lemire, Manchester.	Flashes at 115° F.
11470	Gilbert's Furniture Polish.	Made for Chas. A. Hoitt Co., Manchester.	Ignites at 113° F.
11755	Eagle Furniture Polish.	Eagle Furniture Polish Co., Nashua.	Ignites at room tempera- ture.

SHOE POLISHES FLASHING AT 120 DEGREES F. OR ABOVE

No.	Brand	Manufacturer	Remarks
11319	2 in 1 Black Dressing. Self shining polish for wom- en's and children's shoes.	F. E. Dolley Co., Buffalo, N. Y.	Liquid black. Flash test O. K. but perfumed with a poisonous oil.
11329	Chieftain Black Oil Friction Polish.	Chieftain Mfg. Co., Charlestown, W. Va.	
11330- 11334	Fitz Self-Shining Shoe Pol- ish.	Fitz Chemical Co., Phillipsburg, N. J.	Passed. Liquid black.
11328	Bayer's Best French Black- ing.	Bayer & Co., Philadelphia	Passed. Not a "blacking" but a brown paste.
11325	Griffin In-Er-Tube Black Shoe Cream.	Griffin Mfg. Co., New York	Passed. Thick Cream.
11313	Shulife Li. uid Dressing.	R. M. Hollinshead Co., Camden, N. J.	Passed.
11311	Shulife for Buckskin and Canvas Shoes.	R. M. Hollinshead Co., Camden, N. J.	Passed.
11308	Ripco Heel and Edge Enamel.	United Shoe Machinery Co., Boston, Mass.	Passed. Thick Cream.
11426	Whittemore's White Boston- ian Cream.	Whittemore Bros. Corp., Boston, Mass.	Passed. Thin cream.
11423	Broz's Ezetan Polish. For tan shoes.	Ezetan Shoe Polish Mfg. Co., St. Louis, Mo.	Passed. Black cream.
11424	Whittemore's Quick White Junior. For cleaning and whitening.	Whittemore Bros. Corp., Boston, Mass.	Passed. White cream.
11422	Army and Navy Friction Polish.	B. F. Brown Co., Boston, Mass.	Passed. Black cream.
11421	Whittemore's Oil Paste.	Whittemore Bros. Corp., Boston, Mass.	Passed. Black paste.
11419	Sunshine Shoe Polish.	Osmic Chemical Co., Brockton, Mass.	Passed. Black paste.
11394	U. N. O. Shoe Blacking.	Everett & Barron Co., Providence, R. I.	Passed. Liquid black.
11391	I. T. White Shoe Paste.	I. T. Shoe Polish Co., Baltimore, Md.	Passed. Dry white cake.
11546	Albo. For white shoes.	Whittemore Bros. Corp., Boston, Mass.	Passed. Dry white cake.
11548	Brown's French Dressing.	B. F. Brown, Boston, Mass.	Passed. Liquid black.
11547	U. N. O. Swardown.	Everett & Barron Co., Providence, R. I.	Passed. Dry white powder.
11568	Zip Shoe Cream.	Klaxo Co., Cambridge, Mass.	Passed. Black paste.
11571	Fitz Shine-well Shoe Polish.	Fitz Chemical Co., Philadelphia, Pa.	Passed. Brown paste.

No.	Brand	Manufacturer	Remarks
11437	Slide Shoe Polish.	Geo. J. Kelley Co., Lynn, Mass.	Black Paste. Flash point O. K. but contains oil of mirbane, a poisonous substance.
11427	Packard's Special XLO Black Suede Dressing (revised formula.)	Packard Dressing Co., Stoughton, Mass.	Passed. Liquid black.
11477	Packard's Klassy White (revised formula.)	Packard Dressing Co., Stoughton, Mass.	Passed. White cream.

SHOE POLISHES FLASHING UNDER 120 DEGREES F.

No.	Brand	Manufacturer	Remarks
11425	Chain Lightning Shoe Cream.	Geo. J. Kelley Co., Lynn, Mass.	Black cream. Ignites at room temp.
11438	National Blue Ribbon Polish.	National Blacking Co., Boston, Mass.	Black paste. Ignites at room temp.
11395	U. N. O. Stazon White.	Everett & Barron Co., Providence, R. I.	Flashes at 75° F. White cream (discontinued.)
11326	Chieftain Black Oil Paste.	Chieftain Mfg. Co., Charlestown, W. Va.	Ignites under 80° F. Black paste.
11332	Nu-Heel Enamel.	Everett & Barron Co., Providence, R. I.	Flashes under 60° F. Contains acetone. Discontinued.
11327	Victor Patent Leather Shoe Polish.	(?)	Flashes under 80° F. Black paste.
11312	Griffins Lotion Cream.	Griffin Mfg. Co., New York	Flashes at 88° F. Thin brown paste.
11310	Pee-Chee White Cleaner. (Used in general manner of a shoe polish.)	Pee-Chee Cleaner Mfg. Co., Cleveland, Ohio.	Flashes at 80° F. Thin white cream.
11333	Packard's Special XLO Black Suede Dressing (original formula.)	Packard Dressing Co., Stoughton, Mass.	Ignites below 60° F. Strong denatured alcohol solution.
11331	Packard's Klassy White. (original formula.)	Packard Dressing Co., Stoughton, Mass.	Thin white cream containing strong denatured alcohol.
11734	Packard's Bonny Brown. (original formula.)	Packard Dressing Co., Stoughton, Mass.	Brown paste. Ignites at room temperature.

CLEANING FLUIDS

No.	Brand	Manufacturer	Remarks
11560	Cleanol. Cyclones spots from fabrics, gloves, curtains, (etc.)	Salem Chemical & Supply Co., Salem, Mass.	Safe. Carbon tetrachloride base.
11543	Pyrene Safety Cleaner. Removes grease spots.	Pyrene Mfg. Co., New York.	Safe. Caron tetrachloride base.
11413	Uni-Lak Grease and Oil Remover. (Cautionary labeling but obscurely placed.)	Uni-Lak Co., Batavia, N. Y.	Highly inflammable. Not satisfactorily labeled. Dangerous.
11420	Easy Cleaning Fluid. Keep away from fire or flame.	Bleeker Co., Hampstead, New York	Highly inflammable. Consists mainly or wholly of perfumed gasoline. Dangerous.
11617	Easy Cleaning Fluid. Special. (Purports to have approval of N. Y. Fire Dep't.)	Cleaning Compounds Mfg. Co., New York	Highly inflammable.
11618	Easy Cleaning Fluid. Modified.	Cleaning Compounds Mfg. Co., New York.	Ignites at room temperature but burns for a moment only. Contains insufficient carbon tetrachloride to be safe.

SPECIAL BULLETIN
STATE BOARD OF HEALTH
OF
NEW HAMPSHIRE
ON
TUBERCULOSIS

Information for the Patient.
Tuberculosis Can Be Cured.
Home Treatment.

5767

FOREWORD

YOU MUST KNOW YOUR FIGHT

To win the fight with tuberculosis you must understand the nature of the disease and appreciate fully the problems it presents. Therefore to begin with, your physician must be honest with you. He must state frankly the diagnosis in your case. He must tell you whether you have active tuberculosis or not, and accordingly whether active treatment is necessary or not. He must explain enough to you of the nature of the disease so that you will intelligently cooperate with him. He must inform you as to the facilities for active treatment available in your community. He must decide whether you are to carry out treatment in a sanatorium or at home, all of which depends upon your home surroundings, facilities for home treatment, temperament, etc.

SANATORIUM TREATMENT—BEST

Treatment at a properly conducted sanatorium certainly offers the most ideal conditions for recovery from tuberculosis and gives the greatest assurance of a successful out-come.

IF A PROLONGED RESIDENCE AT A SANATORIUM IS NOT FEASIBLE, TREATMENT AT HOME SHOULD BE PRECEDED BY AT LEAST ONE OR TWO MONTHS' STAY AT A SANATORIUM, SO THAT YOU MAY LEARN THE SANATORIUM ROUTINE AND HOW TO PROPERLY CARRY IT OUT.

If sanatorium treatment is absolutely not to be considered or for some definite reason is impossible then Home Treatment should be instituted at once and conscientiously and persistently carried out.

While undoubtedly it is true that sanatorium treatment is for the majority of patients the quickest and easiest method of obtaining an arrest in pulmonary tuberculosis, we must nevertheless appreciate the fact that treatment at home has a very definite and necessary place in the care of this disease. Under the present conditions of inadequate sanatorium facilities Home Treatment of pulmonary tuberculosis is an absolute necessity in the great majority of cases.

HOME TREATMENT FOR PULMONARY TUBERCULOSIS COMPETENT, INTERESTED AND CONTINUED MEDICAL SUPERVISION ESSENTIAL

TUBERCULOSIS CAN BE CURED but it is a real job to get well from this disease. Most patients think they can leave work for two or three months and get perfectly well. That is entirely wrong. If you have clinical or active tuberculosis it may take two or three years to get a cure. Even treatment in a sanatorium for five or six months merely starts you on the road to recovery. You must carry out the treatment for many months at home.

CHOOSE COMPETENT DOCTOR

Therefore it is absolutely imperative that you have a good guide upon this long and uncharted journey. This guide is your Doctor. To attempt the treatment of tuberculosis at home, without a competent Doctor in charge, is quite as fool-hardy as it would be to take a danger-

ous sea voyage upon a ship without competent officers in charge. Your chance of making a safe landing is about as good in the one case as it is in the other. The details of the treatment are innumerable. It is only by the help of a competent physician who has the knowledge and experience and knows how to use them and fit them together that the ultimate aim may be attained. **THEREFORE, DO NOT MAKE THE SERIOUS MISTAKE OF ATTEMPTING THE TREATMENT OF TUBERCULOSIS AT HOME WITHOUT COMPETENT AND CONTINUOUS MEDICAL SUPERVISION.**

ABSOLUTE CONFIDENCE IN YOUR DOCTOR

You must have absolute confidence in your Doctor. The recovery from tuberculosis even at the best is slow and tedious, beset with discouraging complications, such as fever, lack of appetite, hemorrhage. It is during these trying times that every confidence must be had in your Doctor. The confidence that never doubts the successful outcome; the confidence which comes from the firm belief that there is a trusted and competent hand at the helm. If you have confidence in your Doctor you will naturally follow his advice and instructions faithfully. Again if you are not fortunate enough to have a good Doctor don't keep changing. It never pays to swap horses in the middle of the stream.

REST MOST IMPORTANT

Rest in Bed For Those With Fever

Carefully Graded Exercise For Those Without Fever

Rest is a short word. In the treatment of tuberculosis it is the most important. Upon the proper interpretation of rest and the extent to which the proper interpretation is carried out will one's success or failure largely depend in striving to recover from tuberculosis.

Why is rest of such vital importance? Because it conserves energy. A sufficient store of energy aids the body cells to fight the disease. By the use of proper foods the patient can of course increase his supply of energy, but only to a certain extent. In order to have a sufficient reserve, he must therefore save and not use up energy, and this is accomplished by reducing all motion to a minimum. Every movement of the body requires energy whether it is heavy labor, light work, walking, moving a finger or opening or closing an eyelid.

The time that should be devoted to rest and the degree of rest varies, of course, with each individual and according to the activity of the disease in each patient. Rest therefore must be regulated by your physician and prescribed just the same as any medicine and in the proper dosage.

REST IN BED FOR FEVER

When high fever is present the patient should be absolutely **AT REST IN BED**, all excitement must be avoided, reading, writing, and talking, curtailed or eliminated. The idea that some patients have that should they "give up" and go to bed that they will lose what little strength they have, is wrong. Few people go to bed without being sick and it is the disease and fever which cause the weakness and not rest in bed.

In many active cases the only hope for life is absolute **REST IN BED IN THE OPEN AIR** oftentimes for many months until the victory is won.

How long a patient should remain in bed depends entirely upon his conditions and symptoms, points which only his physician can decide. Rest in bed for fever cases is the life line for tuberculosis patients. If you hold on long and earnestly to this life line, you can be saved.

REST IN THE CURE CHAIR

After the dropping down of the fever the rest treatment is carried on in the "cure chair." This is also a critical period. During this period, the patient sits in the open air in the "Cure Chair" for certain hours during the day. In the great majority of **INCIPIENT CASES WITHOUT FEVER, ARREST OF THE DISEASE IS WON BY REST TREATMENT IN THE "CURE CHAIR."**

Then after the "cure chair" comes the period of carefully graded exercise. This must also be prescribed by your physician in accordance with the needs in each individual case.

Furthermore, it is not enough to have physical rest—but the mind must, as well, be prevented from using up energy. Fretting or worrying, thinking or planning use energy as well as moderate energy.

Rest in the treatment of tuberculosis means setting aside a certain number of hours each day during which a certain amount of energy is stored up. Pottenger says "I would rather have my patient understand the importance of rest and carry it out conscientiously during that period when it is indicated, than any other measure commonly employed in the treatment of tuberculosis."

THE BEST TONIC

Fresh Air and Sunshine—Fresh Air 24 Hours Every Day—

Sunshine Whenever Possible

We can live without food for weeks, we can live for many hours without water, but we cannot live without air for more than a few minutes. Next to rest, fresh air is the most important factor in the treatment of tuberculosis. The fresh air does not have a direct action upon the tubercle bacilli hidden away down deep in the lungs, but it does, to some extent, increase the amount of oxygen in the blood and particularly does it act as a most beneficial stimulant to the skin.

The air where the patient is resting and sleeping should not only be **FRESH** air but also moving air. To secure this it is necessary that the room has proper ventilation—windows on two sides, or at least a room with a transom leading to the outside, so that the air will keep moving.

Fresh air does not necessarily mean cold air. There is a tendency on the part of many people to the idea that so long as the room is cold, the air is fresh. On the contrary, cold air in a closed room is stagnant and poor air. Having the room extremely cold usually leads to the excessive use of bed clothing and thereby defeats one object of the treatment—the stimulation or bathing of the entire body surface by pure moving air.

It is surprising to note how many of the uncomfortable and at times distressing symptoms will disappear when a patient is taken from a closed room and put in the open air. The cough is greatly lessened, the appetite usually improves and digestion is better; the patient sleeps much longer and awakens refreshed, and night sweats disappear. In no better way is this proven than in sanatoria.

WHAT TO EAT AND WHEN

Good Substantial Food

Food is the fuel which, when properly digested, is carried to all parts of the body for the production of energy and energy is that which keeps the human machine going.

In health it is necessary and preferable to take only about so much food as to supply the amount of energy used up in the day's work.

In tuberculosis we have a second factor to take into account. We must not only supply sufficient energy to keep the body going but we must have an additional amount to overcome the loss of body substance that is caused by the disease.

HOW MUCH FOOD

At first glance you may be led to believe that in order to be successful in the treatment of tuberculosis it is necessary to take all the food that you can possibly swallow, and then some more. Not so, however. Experience has shown that too much food may at times be distinctly detrimental to progressive recovery.

Over-feeding not only clogs the digestive system and so prevents proper digestion but so frequently is a period of over-feeding followed by lack of appetite and even disgust for food that the gain in weight produced by large quantities of food is more than lost by the after effects.

Three meals a day of wholesome food supplemented by two or three lunches of milk will suffice if the patient is underweight. When normal weight is attained, three meals a day may suffice. Your physician, however, shall be your guide here as in other details of the treatment.

THE BEST FOODS

Among those foods most useful are:

Fruits—raw or stewed.

Cereals—with cream and sugar—oatmeal, rice, etc.

Eggs—raw, boiled, poached.

Bread and butter—rolls, bran bread, rye bread.

Meats—steak, roast beef, roast mutton, chops, fowl.

Vegetables—baked potatoes, spinach, beans, peas, asparagus, lettuce, cabbage, cauliflower, onions.

Drinks—milk, cocoa, tea and coffee in moderation, water.

Cheese, ice cream.

The meals should be carefully balanced, i. e. the daily diet should contain cereals, meats, vegetables, etc. One of the best foods is milk. What other foods lack, milk contains. Milk is the patient's great protector against errors which may occur in the rest of the diet. Unless over-ruled for reason by the attending physician, every patient should take about a quart of milk a day in addition to that taken in meals through cereals, custards, ice creams and other foods.

PERSEVERANCE NECESSARY

Persistence, Persistence and Still More Persistence

Call it persistence, patience, perseverance or just plain stick-to-it-ive-ness—if you will—but the fellow who has the greatest amount of this element of character undoubtedly has the best chance to make good. The game of "cure chasing" is not one of speed but of endurance.

The first few weeks, or even months, that the patient is playing the game, whether at a sanatorium or at home, are frequently discouraging and disappointing. Even though he has been sick for months and months, he confidently expects that after a few weeks rest in bed, all symptoms should disappear. He wants to know why that temperature doesn't come down to normal; why he is still coughing and expectorating as much as ever; why he hasn't gained weight, and why he isn't improving and getting well, and if he hasn't shown any improvement in four weeks' treatment, what's the use?

A LONG FIGHT

What is the answer to all these questions? In the first place the average patient is sick many months before any symptoms show themselves; again there was probably quite a lapse of time between the first symptoms of illness and beginning treatment; and finally the treatment of tuberculosis is not a matter of weeks or months but oftentimes of years. **THE EARLIER THE DISEASE IS DISCOVERED AND TREATED, THE SHORTER THE TIME OF TREATMENT.** Another time when persistence is needed is when little set backs or some complications arise. It takes nerve and a lot of grit to keep a stiff upper lip and to smile when after a period of slow, but steady gain, comes fever, pain, or hemorrhage. Then it is that by a little more courage, a little more persistence, the fight is won.

THE FAMILY—THE FRIENDS AND THE PATIENT

If the patient is going to have the best possible chance for recovery it is necessary that the attending physician receive complete co-operation, particularly on the part of the members of the patient's family. In the ordinary acute diseases the average family is quite anxious to follow the instructions of the physician. The sickness covers but a comparatively short period of time, and instructions are easily followed for a short time. But tuberculosis is a chronic disease, requiring months and sometimes years for a cure, and the family, the relatives and friends, must work together for months and years.

FAMILY DISTURB DISCIPLINE

THE TRIPOD UPON WHICH A CURE RESTS IS REST, PROPER AND SUFFICIENT FOOD AND FRESH AIR. EACH OF THESE IS A VITAL FACTOR OF THE CURE.

Each of these factors is easily disturbed by thoughtless members of the family and friends lacking judgment.

The patient must follow the schedule faithfully and persistently. Unless the family as well as the patient realize that the one business of a tuberculosis patient is to get well there is little hope for successful home treatment. Unless the family realizes that the rules must be ex-

licitly obeyed, and that neither the comfort of the family nor the pleasure of friends shall be used as an excuse for breaking them, the management of a tuberculosis patient in the home is a hopeless task.

LIVING BY SCHEDULE

It is very important that the tuberculosis patient should live by schedule. IN THIS WAY HE CAN BE SURE THAT HE IS DOING EXACTLY AS HE SHOULD IN ORDER TO GET WELL. In the sanatorium the schedule is all arranged for you, and the physician and nurses aid and instruct you as to how to carry it out. At home because the physician and nurse cannot be with you all the time YOU MUST YOURSELF CARRY OUT THE DETAILS OF THE SCHEDULE ON HONOR.

Here are two schedules which may be used as examples of the routine for home treatment. You will notice that ONE IS FOR PATIENTS WITH FEVER, and THEREFORE CONFINED TO BED and THE OTHER for THOSE WHO HAVE NO FEVER AND ARE TAKING MODERATE EXERCISE.

SCHEDULE NO. 1

FOR PATIENTS WITH FEVER

At anytime during the 24 hours.

- 6.45 to 7.15 Rise, take temperature and pulse, prepare for breakfast.
- 7.15 to 8.00 Breakfast in bed, or if the room is too cold indoors.
- 8.00 to 10.00 Rest hour.
- 10.00 to 12.00 Rest in bed with slight diversion as reading or hand-work.
- 12.00 to 12.15 Prepare for dinner—take temperature and pulse if requested by physician.
- 12.15 to 1.00 Dinner.
- 1.00 to 3.00 Rest hour.
- 3.00 to 4.45 Rest in bed, slight diversion.
- 4.45 to 5.15 Take temperature and pulse, prepare for supper.
- 5.15 to 6.00 Supper.
- 6.00 to 7.30 Rest hour.
- 7.30 to 8.00 Retire.

SCHEDULE NO. 2

FOR THOSE SHOWING NORMAL TEMPERATURE AND PULSE

- 6.45 to 7.15 Rise, dress leisurely, take temperature and pulse.
- 7.15 to 8.00 Breakfast indoors.
- 8.00 to 10.00 Rest hour—in bed or in reclining chair out of doors.
- 10.00 to 12.00 Short walks or other exercise for period of time indicated by your physician.
- 12.15 to 1.00 Dinner.
- 1.00 to 3.00 Rest hour—in bed or out of doors.
- 3.00 to 4.45 Moderate exercise according to the Doctor's orders.
- 4.45 to 5.15 Take temperature and pulse.
- 5.15 to 6.00 Supper.
- 6.00 to 7.30 Rest hour.
- 7.30 to 8.30 Diversion.
- 8.30 to 9.00 Retire.

WHERE YOU CAN GET ASSISTANCE

The State Board of Health, the State Board of Charities, and the New Hampshire Tuberculosis Association are ready and able to render assistance in your fight against tuberculosis, if your financial circumstances make this necessary. It is well recognized that in the protracted treatment of this disease such help is often needed.

The offices of the State Board of Health and Charities are located in the State House at Concord.

The State Board of Health offers free educational literature, free examination of sputum and provides free nursing supervision for the tuberculosis nursing service of the State Tuberculosis Association. The Board also cooperates in the conduct of the tuberculosis clinics of the State Tuberculosis Association. Charles Duncan, Secretary.

The State Board of Charities has charge of the admission of state beneficiaries to the sanatoria at Glencliff and Pembroke. Residents of the state who are unable to pay the expense of treatment at the sanatoria may be admitted in order of their application to the sanatoria. Patients are required to pay such part of the expense of treatment as they are able to. Wm. J. Ahern, Secretary.

Favorable cases are admitted to the State Sanatorium at Glencliff. Charles E. Perry, Supt. Advanced cases are provided for under the provisions of the bill providing \$35,000 a year for the treatment and care of advanced cases.

Under the provision of this bill a large number of advanced cases have been provided for at the sanatorium at Pembroke, N. H.

The New Hampshire Tuberculosis Association has its headquarters at Manchester. Within the last three years it has developed a state-wide system of tuberculosis clinics and tuberculosis nursing service. It now has tuberculosis clinics established in 9 of the 10 counties of the state. By the fall of 1922, clinics will have been established in every county of New Hampshire making a total of 30 clinic centers providing free examination, diagnosis and treatment for those in need of such facilities.

The Association also employs many nurses who work through the clinics and the physicians of the state to provide the necessary follow-up and supervision service in the homes of tuberculosis patients. Robert B. Kerr, Secretary.

